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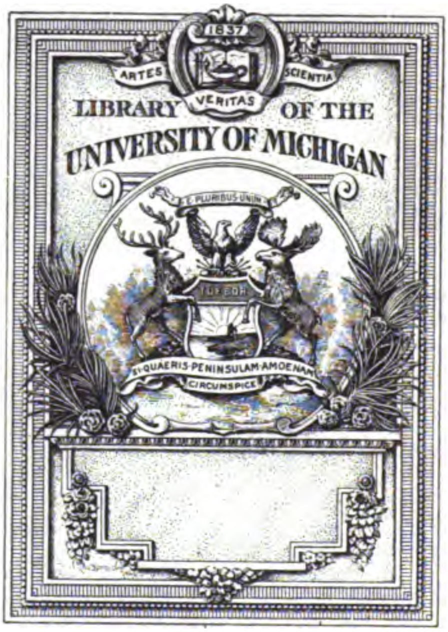
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THE

RETROSPECT

OF

PRACTICAL MEDICINE AND SURGERY,

BEING

A Half-Yearly Journal,

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.

EDITED BY

W. BRAITHWAITE, M.D.,

LATE LECTURER ON MIDWIFERY AND THE DISEASES OF WOMEN AND CHILDREN AT THE LEEDS SCHOOL OF MEDICINE, ETC.,

AND

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PRACTICAL MEDICINE.

DISEASES AFFECTING THE SYSTEM GENERALLY.

1.—ON TYPHOID FEVER.

By Dr. THOMAS B. PEACOCK, Senior Physician to St. Thomas's Hospital.

[Typhoid fever is a disease which by preference attacks people who are comparatively young, the average age of 65 cases which have occurred at St. Thomas's Hospital during the last two years being only 21.8.]

One of the most characteristic features of typhoid is the eruption which generally appears upon the skin. The spots are of a pale rose colour, and fade on pressure. In size they vary from half a millet seed to less than that of a split pea. They are rounded though not distinctly marginated, are flattened on the surface, and give no feeling of hardness or resistance to the finger passed over them. They do not, however, occur in all cases, vary considerably in number, appear at irregular periods, and are of very uncertain duration.

In one case the typhoid spots were combined with an eruption of a distinctly petechial charater. In two or three cases the characteristic spots were combined with a patchy roseolous eruption. In one case their appearance was preceded by a lichenous eruption covering the trunk, and in another instance a similar lichenous eruption appeared in a case in which there were no typhoid spots. In one case their appearance corresponded with an outbreak of herpes about the mouth. In many cases they were succeeded towards the end of the attack by an eruption of miliary vesicles, or sudamina. These are generally found about the lower part of the abdomen, and at the folds of the axillæ and the root of the neck and upper part of the thorax. At first the spots are small and round, and the contained fluid is perfectly clear. Subsequently they increase in size, are flattened, and contain an opaque fluid, and still later they break, and there is a slight desquamation of the skin in the parts where the sudamina have been. Usually the appearance of the miliary eruption corresponds with the outbreak of partial sweats in some parts of the body, though the situation they occupy is often dry and harsh. They do not possess any diagnostic importance, as they appear in other diseases as well as in the specific fevers, as in acute rheumatism and hectic; but they are more common in typhoid than in typhus, and are especially frequent in hot weather. Independently of the eruptions the state of the skin in typhoid is somewhat uncertain; generally it is dry and harsh during the height of the disease, but this is not always the case, and I have several times known a patient perspire somewhat profusely during the whole course of the attack. With the progress of the fever the temperature rises—in slighter cases to 102° or 103°, in the more severe to 104° or even 104.5°, and it is generally higher at night than in the morning. This temperature may be attained in the second or third week and may continue for a week or ten days, when it usually begins to fall, the declension being especially marked in the mornings. The temperature also often long continues above the normal standard, and readily rises again from any slight cause, even when convalescence is well advanced. The pulse is accelerated throughout the attack. In the earlier period it may rise to 110 or 112; in the more advanced to 120; and in severe cases it often becomes very rapid and feeble; the increased frequency of pulse generally being continuous during convalescence.

The condition of the tongue in typhoid is very variable. Most commonly in the early stage it is covered with a whity brown fur and somewhat dry; at a later period it becomes very dry, and is covered with a thick brown fur, the tip and edges being often at the same time red and sore-looking. There are also sordes on the teeth and the lips are parched. In other cases, however, the tongue has only the whity brown fur and is not quite dry during the whole illness; and in yet others the tongue is throughout morbidly red, glazed, and fissured. Usually, as convalescence advances, the fur gradually recedes from the tip towards the root of the tongue, leaving the external surface red and sore-looking; but sometimes the coating is rapidly shed and the whole surface assumes the same condition.

The abdominal symptoms are generally predominant. At the commencement of the attack there is usually more or less diarrhœa, the bowels being moved from three or four to six or eight times in the twenty-four hours, and the stools are of a pale yellow or greenish or brownish colour, and are almost entirely fluid. With the progress of the disease the diarrhœa generally subsides, the stools are passed less frequently and become more consistent, and at a still later period the relaxation generally ceases and is replaced by constipation. In some cases, however, the diarrhœa will be yet more severe, so that the bowels may be moved every few minutes. There may be blood in the stools, and the evacuations may be passed in bed, either from the patient being unconscious or from his being too weak to retain them. In yet other cases, on the contrary, there may be an entire absence of diarrhœa, evacuations only being procured, during the whole course of the fever, by the exhibition of aperients or of enemata. Of the cases reported upon, in several there was no diarrhœa, and in one of these there was obstinate sickness and vomiting, and in two others the same symptoms occurred, though the bowels were also relaxed. In four cases blood was discharged by stool. In one of these the hemorrhage occurred on the fourth day after admission and the sixth from seizure, but the patient had been ailing for a longer time, and death rapidly ensued. In another case the bleeding did not take place till the twenty-ninth day from admission and the forty-third of illness, and the patient survived three days. The other two cases terminated favourably, though in one of them the patient bled profusely from the nose and also vomited blood. The hemorrhage occurred two days after admission or on the thirteenth day of illness. In the other case the bleeding was in progress when the patient was admitted after a week's severe illness, but he had been ailing before. In a fifth case which recovered the patient had passed blood in the stools before admission after being three weeks ill, but he had no bleeding afterwards. It is well known that epistaxis is a very common symptom at the commencement of typhoid, and I have known in several cases very large quantities of blood so lost. In two such instances, not included in this calculation, the patients would certainly have bled to death had the nostrils not been plugged.

There is very generally some degree of cerebral disturbance in typhoid, though often this does not amount to more than that the patient is so torpid as to be with difficulty aroused to answer questions, and generally there is some delirium at night, and he is usually very deaf. In some cases, however, very active delirium occurs, especially at the commencement of the attack. Indeed a state of active mania is much more common in typhoid than in typhus. In four of the present series of cases there was violent raving, though in all the patients recovered. In several of the cases, and especially in young persons, there was often marked impairment of mental power and great fractiousness long after convalescence was otherwise well established. In two cases, lung tissue. These symptoms, however, generally subside as the convalescence advances and the patient gains strength. More severe pulmonary disease may however occur, and in one of the cases reported upon there was extensive pleuro-pneumonia, and in another general capillary bronchitis. Both patients recovered.

It is by no means uncommon for the urine at the height of the fever to become slightly albuminous and to be retained. The latter symptom is reported to have occurred in one of these cases.

It is one of the peculiarities of typhoid also that there is a peculiar tendency to relapse and for all the symptoms of the disease to recur, even after the patient has apparently become quite convalescent. In two of the cases reported upon relapses occurred; in one on the thirty-first day after admission and thirty-eighth day from seizure; in the other on the thirty-third day from admission and the fortieth from seizure. In both cases there had been the usual eruption on the skin, and in one of them there was a fresh outbreak of spots. Both patients ultimately recovered. One patient was also admitted into the hospital a week after the commencement of a relapse. He had been first attacked a month before and had become to a considerable extent convalescent. In this case also there was a reappearance of spots. The patient recovered. In several cases there were bedsores, or abscesses formed in different parts of the body during convalescence. One patient was admitted with embolism of the femoral vein, and another with contraction of the lower extremities, and a third with a tumid abdomen threatening marasmus, the result of attacks of typhoid.

In a case which I recently saw in consultation with Dr. Greenwood, of Dalston, a female, thirty-four years of age, had pyæmia after typhoid, followed by inflammation and rapid suppuration and collapse of one eye, and died in a few days. Recently also I saw a boy about ten years old in whom an attack of typhoid assumed a well-marked remittent type. He first suffered from diarrhœa, with delirium and other symptoms of fever. When I saw him, about the sixteenth day, there was still some diarrhœa; the abdomen was tumid; his intelligence was much impaired, and he was greatly prostrated; there were some spots on the abdomen, and others subsequently appeared. A day or two after this he began to have very marked exacerbations at about two o'clock in the afternoon and the same hour in the morning, during which his temperature rose to 104° and 105°. These attacks were followed by states of excessive exhaustion in which his temperature fell below 98°, in some of which he was apparently on the point of death. He was, however, rallied by the very free exhibition of stimulants, and under the use of quinine ultimately recovered. The attacks were more marked on the alternate days, and, though they gradually subsided, he continued to have some increase of fever at the stated periods even when convalescence was well advanced.

It is probable that the appearance of the eruption in the skin corresponds with the progress of the local disease in the alimentary canal. Generally shortly after the spots cease to come out, which may be regarded as indicating the completion of the febrile process, there is an improvement in the condition of the patient. As, however, the injury which has been sustained by the bowel is only slowly recovered from, a state of subacute fever continues for a considerable time; the rapidity of the convalescence being influenced by the extent of the previous disease, by the degree of prostration caused by the fever, and by the existence or absence of other local complications. The disease is thus of very variable severity and duration. Sometimes it is only a slight affection which quickly subsides; in other cases it is very intense and protracted; and in yet other instances, though the fever may never be severe, it may yet be of very long duration. It has, indeed, been clearly shown by different observers that the constitutional disturbance cannot be regarded as indicating the amount of local disease, but that the fever is to be regarded, in the language of the older writers, as an *essential* one. The intestinal disease, though it very much aggravates the symptoms of typhoid, is, indeed, only a result of the fever, the relation between the two being precisely analogous to that which obtains between the fever and the eruption in variola.

The following may be regarded as the ordinary course of a case of typhoid of medium severity in which the patient recovers.

The patient, at the time he comes under observation in the hospital, is usually able to walk to bed, and he has been more or less ill for from seven to fourteen days—usually about ten days. At that time the bowels are relaxed, the stools pale and liquid, and passed several times daily. The abdomen is somewhat tumid, and there is generally some pain and tenderness, especially at the lower part of the right side. The spots are then often present or come out soon after. The tongue is covered with a whity-brown fur and somewhat dry; or it may be brown on the dorsum, and red and sore-looking at the tip and edges; more rarely it is clean, morbidly red, and fissured. The skin is usually somewhat dry, but it may be moist or profusely perspiring. It is warm, the temperature reaching often 100° or 102°, or to 103° or 104°, and being somewhat higher at night than in the morning. The pulse ranges 100 to 108 or 120. There is a slight flush on the cheeks, the lips are parched, the eyes heavy, and the patient is oppressed and restless, and slightly delirious at night.

During the next week or ten days the patient is much prostrated, and lies immovably on his back. The face is flushed, the expression of countenance very heavy and the eyes dull, the lips are parched, and the tongue is generally dry and brown, or brown on the dorsum and red at the tip and edges. The temperature continues much as before; the pulse is about 120, and weak; the bowels are relaxed, and the abdomen is more tumid. The spots still continue to come out a few each day. The skin is generally very dry and harsh, but sometimes continues moist. The patient is more torpid, and has low muttering delirium at night, and is so deaf that he requires to be spoken to in a loud voice; but when aroused can answer simple questions and protrude his tongue.

After about a week or ten days the spots cease to appear, and soon after there is an improvement in the general condition; the patient becomes less prostrated, he hears more readily, and answers questions more quickly and intelligently. The diarrhœa ceases, and is, perhaps, replaced by constipation. The temperature falls, especially in the morning, so that there is a very marked distinction between the temperatures of the morning and evening. The tongue becomes less dry and cleaner, the fur generally disappearing gradually from the point towards the root. Sometimes the tongue becomes suddenly clean, and is left morbidly red and sore-looking. The skin also loses its dryness and harshness, and miliary spots often appear in different parts of the trunk, and coincide with partial perspirations. On or about the twenty-first day the convalescence is generally well established, and the patient recovers; but the convalescence may be very prolonged by the extreme weakness of the patient, or from the occurrence of some local complication.

In come cases the whole train of symptoms is less marked, the tongue may never become dry and brown, and the temperature may not be high, the diarrhœa is less, and the convalescence may be established about the 14th day. In others the patient may not become convalescent before the 28th or 35th or 42nd day, or even later. The duration of the disease is also by no means to be measured by the apparent severity of the attack, some cases which have very urgent symptoms being only of short duration; and others, in which the symptoms are slight, being on the contrary very prolonged.

During the whole course of the disease also, and however slight its apparent character, there is danger of the sudden accession of severe symptoms. Hemorrhage may occur and may destroy or imperil life; peritoneal symptoms may come on from extension of inflammation from the mucous membrane to the serous coat of the intestines or from decided perforation; or serious inflammation may occur in the brain or lungs.

If the patient dies, death may occur as early as the eighth or ninth day, but most usually it takes place in the second, third, fourth, or fifth week, and in some cases at a still later period. In the cases which prove fatal at the earlier termediate period there will be found active ulcers with abrupt edges in some places, especially near the ileo-cæcal valve, and partially separated sloughs in other parts, particularly higher up in the canal. At the more advanced periods there will be the remains of ulceration in the process of healing, the edges of the ulcers being depressed and the surface not deeply excavated; and at a still later period nearly all evidences of disease may have disappeared.—*St. Thomas's Hospital Reports*, 1873, *p.* 17.

2.—THE NATURE AND ORIGIN OF TYPHOID FEVER, CONSIDERED MORE ESPECIALLY WITH REGARD TO ITS PREVENTION AND TREATMENT.

By the EDITOR OF THE MEDICAL TIMES AND GAZETTE.

In considering the origin of typhoid as a specific disease, spreading only by its own proper poison, two difficulties meet us. First, we know not the exact period of incubation in some cases that appear to be very short, in others it apparently lasts weeks; and, secondly, we know not how long the specific germ, which is capable of causing the fever, can exist in a state capable of renewed growth outside the body. Here we take it for granted that the disease is occasionally propagated in the fashion above indicated; and that this is true, few will, we think, dispute. Nay, more, it can be fairly shown that this is so in a great number of instances—perhaps even the majority of instances, though not meantime in all. As already pointed out, those instances where typhoid fever is supposed to have arisen *de novo* are in many cases unsatisfactory as regards history. All loopholes have not been closed excluding the possibility of a specific poison introduced in the ordinary way, and a good many of them were observed at a time when the idea of a specific agent invariably acting as the cause of typhoid fever was not generally entertained. In truth, the so-called pythogenic theory cannot in the majority of cases be for a moment entertained. We are all acquainted with places constantly saturated with evil odours of all kinds, including not unfrequently that of decomposing fæcal matter, and yet there is no fever. Horrible though it may seem, these matters make their way into drinking water, and yet no typhoid fever follows. To excite an outbreak of typhoid something more is necessary, and the question is—What is this something? Without doubt it has been shown by the researches of Drs. Budd, Ballard, and many others that the special exciting cause is typhoid excreta; and if so in a certain number of instances, there is a strong probability that it is so in all. In the typhoid stools undoubtedly are to be found the germs which propagate typhoid in a certain number of instances; and if putrid animal matter will not alone generate typhoid, it certainly constitutes a nidus, in which these germs thrive and apparently retain their vitality for a long period of time. The nature of these germs is unknown to us, but, inasmuch as they retain their power of self-propagation, they must consist of particles more or less minute of living matter; and it is certainly of importance not to confound the half or wholly dead masses of cheesy glands eliminated in the course of the fever, and giving the characteristic appearance to typhoid stools, with these active organisms. In point of fact, it seems to us that one great difficulty in the way of the universal acceptation of the germ theory as the cause of typhoid has been this difficulty of appreciating the early period at which these typhoid stools begin to contain the germs of the malady. Those who have seen much of typhoid fever know well the cases where, beyond a diarrhœa, the patient seems, comparatively speaking, fairly well; at all events, is able to walk about, and perhaps to carry on his usual avocations. In such a patient the symptoms may suddenly take a serious turn, showing that the malady has inappreciably reached a considerable height whilst altogether unsuspected. Such a patient may have been, unknown to himself and others, spreading the fever broadcast, for everything points to the fact that the original focus of the disease may contain only a small quantity of infective [illegible] the most serious consequences. [illegible] farmhouse, the history of which was so well worked out by Dr [illegible] in London [illegible] Handbook of [illegible] the disease was [illegible] The patient's [illegible] weeks after this was [illegible] experienced in [illegible] typhoid germs. The only other argument advanced is [illegible] worthless. It is urged that such evidence can rarely be traced in towns and large cities. This is quite true; but when we consider the universal prevalence of the water-closet system, with drainage more or less imperfect, the ventilation of sewers through closets and into bedrooms, together with the more or less continued prevalence of typhoid fever in some part or other of large towns, our wonder is [illegible]—in fact, is turned the other way; for it seems much more wonderful that we should ever find out the exact cause of an outbreak of enteric fever than that we should sometimes miss it. Moreover, we are only beginning to appreciate certain agencies in propagating fever. Milk is now one of these, but we shall be surprised if it stops there.

Typhoid fever is a specific form of disease, generated by a specific poison. In the management of it we must not only do our best for the individual, but it is also our duty to prevent, as far as possible, any spread of mischief among the community at large.

We have in the mean time no specific remedy which we can rely on for cutting short enteric fever, and no substance we can be quite sure of for destroying typhoid germs within the system. As far as specific treatment is concerned, only two substances have of late been characterised even approximately as such: these are calomel and iodine. On the Continent, especially in Germany, where enteric fever is even more common than with us, the use of calomel is supported by authorities like Traube, Wunderlich, and Niemeyer, who hold that it not only does good generally, but even helps to cut short the fever. The dose given is from six to ten or fifteen grains three or four times in the course of the first twenty-four hours after the patient comes under treatment, if this be fairly near the commencement if the disease. Iodine in iodide of potassium (or Liquor iodi) has also been used, and has been asserted to be of great service. Certainly statistics on the larger scale seem to show that cases so treated do on the average much better than those left to take their own course; but here, as in many other respects, statistics are but poor guides, and there is notoriously one element they do not include, which in enteric fever is nearly all in all—that is, nursing and subsidiary management. Suffice it to say that the weight of authority is in favour of giving one or two doses of calomel if we see the patient in the early stage of the malady.

When we turn to the consideration of the practicability of destroying the poison within the system, one or two noteworthy facts suggest themselves. First, as already pointed out, the poison is almost certainly mainly propagated in the alimentary canal, and is therefore much more than ordinary animal poisons within the reach of medicaments. Experience has shown that certain substances, like green sulphate of copper, creasote, and carbolic acid, Condy's fluid, &c., have the power of destroying the germs of the disorder outside the body. Why should they not be used inwardly? To this the reply is, that there is no particular reason why they should not in moderate quantity: but experience is wanting as to their efficacy in arresting the production of fever germs, or in destroying those already formed. Another suggestion, however, occurs; it is

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[illegible] Sponging is simpler and is available at anything over [illegible] Fahr. [illegible] quinine effectually it must be given in full doses: as a rule we begin with twenty grains, and continue for some time thereafter to give five grains every four hours. This, no doubt, gives some headache and buzzing in the ears, but that is only showing that the remedy is having the [illegible] effect which is essential to the due development of its power of depressing temperature. With these three remedies in our hands, not every case of typhoid requires cool baths; but if the temperature keeps rising and remains persistently over [illegible] Fahr., then the bath should be brought to the bedside, carefully raised to the temperature of [illegible] Fahr., and the patient placed in it for [illegible] minutes. This will cool the surface, but will have, in the first instance, little effect on the internal temperature, for causes on which we cannot now enter. After the patient has been replaced in bed, however, the internal heat also falls, but too often only for a time, insomuch that in bad cases the baths may require to be repeated every two hours, and as many as [illegible] may be given in the course of the disease. Thus used there can be no question of the exceedingly great usefulness of cold water baths; the only diversity of opinion seems to be as to the proper time, as indicated by the patient's temperature, when to begin them. But even beyond this there are exceptions to ordinary rules. The effect of the cold water is to arrest or diminish cutaneous circulation, and consequently to produce some degree of internal congestion. If, therefore, there be threatening of intestinal perforation, when the necessary moving of the body might be dangerous, or of intestinal bleeding, when the congestion might give rise to troublesome hemorrhage, the cold water cannot well be employed in this fashion; but it is not to be forgotten that the pulmonary congestion, so apt to be a dangerous concomitant of typhoid, is relieved rather than otherwise by the use of the bath.

We can hardly leave these complications, especially intestinal hemorrhage and perforation, without a word of warning. They are especially apt to occur when patients are making some extra exertion, such as the rising to stool or the like. These efforts, therefore, towards the period of the disease when they are most likely to occur—i.e., about the third week—should be strictly forbidden. But this caution is also necessary in another way. Cases of typhoid do occur matter to give rise to the most serious consequences. Nothing could show this more clearly than the curious epidemic caused by the milk of a dairy company in Marylebone, the history of which was so well worked out by Dr. Murchison. We are only, too, beginning to appreciate the strong vitality of these germs under favourable circumstances. Liebermeister, in a capital article on the subject of typhoid, in Ziemssen's newly-published "Handbook of Medicine," in which substantially the same view as that advocated by us is adopted, quotes from Von Gietl an exceedingly instructive illustration of this. In a village where for a long time no typhoid had prevailed, the disease was introduced by a patient who had acquired the disease in Ulm. The patient's discharges were thrown on the dust-heap, and when some weeks later this was in part removed, of five persons engaged in its removal four took unmistakable typhoid. The discharges of these persons were buried deep in the same dunghill, but when nine months later this was entirely removed, one of the two men so employed was sized with typhoid and died. These two sets of facts go far, in our opinion, to explain the difficulty heretofore experienced in connecting outbreaks of typhoid with direct introduction of typhoid germs. The only other argument advanced is, comparatively speaking, worthless; it is urged that such sequence can rarely be traced in towns and large cities. This is quite true; but when we consider the universal prevalence of the water-closet system, with drainage more or less imperfect, the ventilation of sewers through cisterns and into bed-rooms, together with the more or less continued prevalence of typhoid fever in some part or other of large towns, our wonder at this ceases—in fact, is turned the other way, for it seems much more wonderful that we should ever find out the exact cause of an outbreak of enteric fever than that we should sometimes miss it. Moreover, we are only beginning to appreciate certain agencies in propagating fever. Milk is now one of these, but we shall be surprised if it stops there.

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Practically, however, we are brought to this pass. We know of no assured means of cutting the malady short; we must, therefore, let it take its course, being careful to look out for those complications which are prone to be fatal if not sharply dealt with, but which are in reality fairly amenable to treatment. Foremost amongst these is excessive bodily heat—not hyperpyrexia in the sense the word has come to assume (a temperature of 106° Fahr. or more), but what would be deemed by some to be ordinary pyrexia. All are agreed that hyperpyrexia is a thing to be dealt with sharply, but all are not agreed as to the particular point at which bodily heat should begin to be considered as an enemy to be dealt with separately and apart from the enteric disease. Abroad, where the cold water treatment of enteric fever has obtained a more general recognition than with us, it is common to begin with a temperature a little over 102° Fahr. For our own part, we hardly feel inclined to begin any specific treatment at such a line, but we claim no infallibility in the matter, and, in point of fact, may be wrong in so doing. Nevertheless it seems to us that temperatures under 104° Fahr. may as a rule be dealt with by increasing the quantity of alcohol given to the patient, by tepid sponging of the surface, and especially by the giving of quinine. As to the administration of alcohol, we hardly think it possible to lay down rules to be generally available. Sponging is simpler, and is available at anything over 100° Fahr. But to give quinine effectually it must be given in full dose; as a rule we begin with twenty grains, and continue for some time thereafter to give five grains every four hours. This, no doubt, gives some headache and buzzling in the ears, but that is only showing that the remedy is having the physiological effect which is essential to the due development of its power of depressing temperature. With these three remedies in our hands, not every case of typhoid requires cold baths; but if the temperature keeps rising, and remains persistently over 104° Fahr., then the bath should be brought to the bed-side, carefully raised to the temperature of 70° Fahr., and the patient placed in it for ten minutes. This will cool the surface, but will have, in the first instance, little effect on the internal temperature, for causes on which we cannot now enter. After the patient has been replaced in bed, however, the internal heat also falls, but too often only for a time, insomuch that in bad cases the baths may require to be repeated every two hours, and as many as 200 to be given in the course of the disease. Thus used there can be no question of the exceedingly great usefulness of cold water baths; the only diversity of opinion seems to be as to the proper time, as indicated by the patient's temperature, when to begin them. But even beyond this there are exceptions to ordinary rules. The effect of the cold water is to arrest or diminish cutaneous circulation, and consequently to produce some degree of internal congestion. If, therefore, there be threatening of intestinal perforation, when the necessary moving of the body might be dangerous, or of intestinal bleeding, when the congestion might give rise to troublesome hemorrhage, the cold water cannot well be employed in this fashion; but it is not to be forgotten that the pulmonary congestion, so apt to be a dangerous concomitant of typhoid, is relieved rather than otherwise by the use of the bath.

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Many other things might and perhaps ought to be said on the subject of treatment, but our space forbids. There is, however, one grand rule never to be lost sight of in dealing with this as with other diseases. Look after the little things. Good nursing is all-important in typhoid; and to insure good nursing the practitioner should always be a better nurse than the nurse herself—a kind of qualification which the rising generation of practitioners is too apt to sneer at. And then the diet; that, again, is a matter requiring profound consideration. If there is a question of a vessel or an ulcer giving way, a slight thing may do it; an over-distended bowel, whether from food or gas, may have a fatal issue. But of all things, careful dieting during early convalescence is most essential. Often a relapse is precipitated by the injudicious use of certain articles of food; and we have often seen the relapse from this cause much more severe than the primary attack.—*Med. Times and Gazette, Aug.* 8 *and Oct.* 10, 1874, *pp.* 148, 424.

3.—THE TREATMENT OF ENTERIC FEVER BY COLD BATHS.

By M. Frantz Glenard, Interne des Hôpitaux, Lyons. (Translated from the *Lyon Medical* by Dr. W. Macewen.)

The starting point of Brand's treatment is a just appreciation of enteric symptoms and their therapeutical indications. In this way Brand, while throwing the blame of all the serious complications and the fatal terminations of enteric on the prolonged excess of the febrile temperature, shows that there can be ranged, on one side the primary and necessary symptoms proper to the manifestation of enteric fever, pyrexia, elevation of temperature, bronchial catarrh, hypertrophy of the spleen, roseola, and various eruptions, signs which, with the exception of the temperature, are always mild, and which can neither be hindered nor extinguished by cold water; on the other side the accidental and consecutive symptoms, those dependent on the high temperature; cerebral and nervous symptoms—delirium, somnolence, coma, typhomania; serious affections of the pulmonary tissue—atelectasis, hypostasis, pneumonia, gangrene, ulcerations; intestinal lesions, fuliginosity, gastralgia, dyspepsia, intestinal catarrh, diarrhœa, tympanites, ulcerations and their consequences, hemorrhage and perforations; the lesions which Zenker has met with in the striped muscles, which Liebermeister has studied in the liver, the spleen, kidneys, and heart; the tendency to collapse, hemophilia, eschars, &c., &c., symptoms which in themselves constitute the gravity of enteric fever, and which are never met with in patients treated by cold water. But the danger of this elevation of temperature does not consist in the simple fact of its reaching a certain height, but in the maintenance of the temperature at a pernicious level. Even the temperature of 42° C. is not fatal if it fall soon to 39° C., but it soon becomes so if it remains long at that height; and this persistence presents the same degree of danger between 39° C. and 40° C. as between 40° C. and 41° C. This indication is then formulated: it is necessary to combat the excess of temperature during the whole course of the disease; that is to say, *to prevent exacerbations and maintain remissions.*

The first point in the treatment lies in its employment from the outset of the disease, for it is certain that refrigeration is more efficacious in preventing impending lesions than in curing them when the high temperature has produced a dissolution of the blood, or involved important organs. The phrase "from the outset" is to be understood as referring to the moment when the diagnosis of enteric fever is certain, or as soon as the physician is called. Precious time should not be lost in using drugs, and only resorting to cold baths when the case appears urgent.

Further, there is no harm in treating by this method febrile states that have an analogy to enteric; their evolution, in fact, is more rapid under this treatment than by the use of medicines. Only, it is necessary to guard against believing, in such a case, that cold water has arrested enteric fever. In the Saint-Pothin ward I have seen five cases of pyrexia assuming an enteric appearance, that were cured after eight or ten baths, and I have not hesitated to eliminate them from my statistics though the symptoms at the beginning of the disease resembled those of enteric fever. Even when an error in diagnosis has led to the use of the baths in such a disease as acute tuberculosis, the effects are not unfavourable to the patient.

It would be most important if severe cases of enteric could be distinguished from mild at the outset. Those who oppose the system ask why inflict this barbarous treatment on 100 patients, of whom 80 will recover without cold water; but when this method has saved the 100, is it not culpable to refrain? There is no means of knowing that a mild case of enteric fever may not suddenly assume a most serious aspect. It is then too late. If the form is slight, so much the better, the patient recovers the sooner; if it is serious the recovery is certain, provided it is treated from the outset. If the treatment is applied later it is necessary to distinguish two categories: the first comprises cases which are submitted to cold water on account of the gravity of the type, and the insufficiency of the medicines: the second comprises serious cases in which grave complications have supervened. Of the first class the greatest number recover. Of the second it happens that a life is lost here and there from lesions which are necessarily fatal. It is not uncommon to have recourse to this treatment with a moribund patient; but Brand's method is not more efficacious than drugs against death.

The least important objections against this treatment are *difficulty* and *barbarity*. In civil hospitals the first question has long since been decided by the use of the baths in the practice of German physicians. In the Hotel-Dieu at Lyons the directorate of the hospital have arranged, in view of facilitating Brand's method, two wards for enteric patients, one for female, the other for male. The eleven cases treated in these wards up to this day have resulted in eleven recoveries. At the Croix Rousse Hospital the thirteen cases treated since mine have given thirteen recoveries.

In private practice, it is said, evidently without reflection, that the method is quite unsuited, as if the mere matter of convenience should present itself before that of the life of the patient. But here there is no difficulty; as I will show, further on, seventeen cases treated by cold baths in private practice resulting in seventeen recoveries.

Lastly, when everything has been considered, and it is agreed that the method is practicable, then the plea of its barbarity is advanced. This looks like the result of exaggerated sensibility, or want of consideration on the part of the physician. But even should the treatment appear barbarous (and it will be shown that it is not), is all that accrues therefrom to be considered worthless; the certainty of the prognosis, the rapidity of the convalescence (three or twelve days in place of thirty or forty), the freedom from sloughs, and the sequent weakness of the intellect or the senses, the allaying of all anxiety on the part of the family or the physician? The physician cognisant of the treatment knows what power he has; and the family who see the patient rise on the third day to bathe himself, crying for food, serving himself, assisting in the change of his compress, &c., sleeping calmly, and, in a word, assuming the appearance of health, judge for themselves of the prognosis, and are satisfied.

1. The method of treatment which exercises the most favourable influence both on the progress and issue of enteric is that which considers the undue elevation of the temperature and the adynamic tendency of the disease, and which has for its principles of action *refrigeration* and *constant alimentation* of the patient.

Since Brand's work appeared, the statistics founded on 6 to 8000 enteric patients treated by this method, in Prussia, Austria, and Russia, give a mortality of 4·5 to 7·6 per cent., in place of 18 to 25 per cent., which used to result from the medicinal method.

2. The therapeutical proceeding which corresponds best with the indication: refrigeration consists—first, in the treatment by cold water from the outset of the disease, until it terminates in defervescence; second, to combat each exacerbation and maintain the remissions; third, to administer with that end large cold baths, repeated night and day (according to rules indicated above); cold compresses, cold lotions, and, finally, iced water to drink in the intervals of the baths. (Brand's process.)

That proposition is justified by our third conclusion:—

3. The aphorism of Brand, which says—*Every enteric patient regularly treated from the commencement by cold water will be free from complications, and will recover*, is true up to this date. It is the same for this aphorism: *Every degenerate case of enteric, where the treatment is applied late (after the first period), will present greater chances of recovery when treated by cold water regularly administered than under any other method of treatment.*

Out of our 47 cases, in fact, there have only been eight treated after the twelfth day. If the fatal case from Saint-Pothin Ward be added, there would be eight successes out of nine cases; an eloquent result, if the peculiar conditions are taken into account, the treatment by cold water having been applied as a last hope when the prognosis was fatal, notwithstanding the use of the medicine employed.

The corollary follows. Every enteric patient treated by cold water who presents any complication, or who does not recover, has not been treated regularly and from the beginning. This is quite logical, and Brand should not reproach us for having formulated it.

It is to present the truth of this last proposition that we have separated the failures; for there will always be failures, suppose the method should be universally adopted, even in its detail. I only wish to show that cases which are suddenly struck down, and where the patient dies two or three days after he has been put to bed, are those either where the disease has been latent (*typhus ambulatorius*), or where the patient has been put to bed at the last extremity, and where the method having been administered, apparently at the commencement, will in reality have been applied when the enteric fever has reached its second period. The *post-mortem* will then reveal lesions ulterior to the tenth day (the soonest period, according to Griesinger and most authors, for the detersion of the intestinal ulcerations to appear), and will prove that the pathological commencement had preceded the subjective symptoms.

I do not require to add that such cases will present themselves very exceptionally in private practice, and that in the hospitals the mortality of enteric reduced to that minimum will not pass from 4 to 5 per cent.

Besides these conditions, in explaining the failures in the cases where the treatment has been regularly carried out from the commencement, there will require to be taken into account the cases of miliary tubercle, which are not so rarely mistaken for enteric as may be supposed.

As a final conclusion, the results obtained at Lyons by Brand's method to the treatment of enteric, justifies its adoption in the hospitals of that town, and encourages its use in private practice.

Description of Brand's Method.—According to the indications, the physician has the selection of any method which produces refrigeration: Cold compresses, the shower, various lotions, &c.; their regular and methodical application being the only condition indispensable to success. Circumstances and social position may regulate the choice of the refrigerant. Brand prefers the plunge bath, which is the most suitable, its action not depending on the zeal of the nurse. The water should be at the same temperature throughout, and it should not be a tepid bath gradually cooled, the shock in the former case being regarded as beneficial. The instructions to the nurse are as follows:—The nurse will, every three hours, take the rectal temperature of the patient, and give him a bath at 20° C., of fifteen minutes' duration, night and day, until the thermometer placed in the rectum for five minutes does not register 38·5° C. The patient important detail, especially where the patient presents cerebral symptoms. After the nervous symptoms have been allayed, the spray may be given at the same temperature as the bath. That affusion having lasted one or two minutes, the nurse rubs the limbs of the patient for three or four minutes; then he is left at rest. His breathing may become difficult, and his teeth may chatter, but he must remain in the bath for 15 minutes. When he is about to be removed from the bath the affusion is to be repeated. He should be kept at least 15 minutes in the bath, even should the shivering set in from the commencement; and longer should the shivering be late of appearing.

He is then removed, his night dress put on, without drying him, a sheet is thrown over his feet; his mattress should be hard enough not to yield to the weight of the body, which should be covered by a sheet in summer (also by a light linen cover in winter). A little weak tepid soup is now administered, along with a mouthful of old wine, and he is left alone to rally from his shivering, which lasts 15 to 20 minutes, sometimes for even an hour.

Fluid nourishment should be given regularly, and always tepid—mouthfuls of iced water should be taken from time to time. If the patient is very weak, a spoonful of old wine may be administered before the bath.—*Glasgow Medical Journal, July*, 1874, *p.* 370.

4.—ON THE EXCITING CAUSE OF ENTERIC FEVER.

By Dr. WILLIAM STRANGE, Senior Physician to the Worcester Infirmary, and Medical Officer of Health to the City.

In ninety-nine cases out of every hundred of enteric fever the origin is not from any germ or contagium derived from the intestines of some person ill of the same disease, but pythogenic—that is, bred of a poison generated in decomposing or putrid animal matter, chiefly when dissolved or suspended in water; and which, exhaling into the atmosphere, enters the lungs or is taken into the stomach in drinking-water. There, possibly, it multiplies and generates a true contagium, which, when it is added to sewage matters, or to drinking-water—*especially if the latter be also foul*,—becomes a still more virulent poison, or else the same poison in a more active state than that which, generated pythogenically, first induced the fever.

Very many years ago, in a school under my cognisance in a small country town, twenty-six pupils, out of a total of about sixty-five, were attacked by enteric fever, all within a few days of each other. The school was dismissed. On reassembling the next half, it was not found (although the evidence of this could not be considered very exact) that anyone, nurses or friends, except the boys actually at the school, took the disorder. The cause of the outbreak was a series of very filthy privies in which the boys were in the habit of congregating. These privies were totally unconnected with any drain, and no one, except the boys, was in the habit of using them, nor was there, nor had there been, any case of the fever in the town or neighbourhood for years. The curious thing was that the fever was generated at the beginning of a half-year, when the contents of the privies had been undisturbed, and had had time to get stale, and for ulterior changes to take place in them.

In the year 1869 a violent outbreak of enteric fever took place at a healthy village near this city. In a row of cottages, about twenty-eight in number, there were upwards of twenty cases, and several deaths. There was no drainage attached to the cottages; they had, for about every two houses, a privy and cess-pit. These privies becoming foul, the owner of the cottages had them all attended to at one time, the contents being thrown into a heap at the back of the cottages, and allowed to remain for some days in exceedingly hot weather. There was no drain or sewer, nor other means by which the enteric contagium could have passed from house to house, and no person ill of the disease had been known to arrive there.

If it be said that some person affected with the disease might have used one of these privies, and that the contagious germs from his intestines had thus had an opportunity of exhaling into the atmosphere when the night-soil was disturbed, and so infecting the inhabitants, how is it that, when we have these very germs bodily in the bed-pan in the sick-chamber, they do not exhale in like manner, and infect the nurses and friends of the patient? Is it not far easier to believe that the poison was here generated *de novo* by the action of the sun and atmosphere upon this putrid mass of fæcal matter; and as the mass exposed was great, so the quantity and virulence of the resulting poison was great?

But, whichever theory may best explain the circumstances of this outbreak, that the poison was volatile and existed in the atmosphere was positively certain from the following fact. At the time this outbreak was taking place, I received into the Infirmary a servant-girl suffering from enteric fever, who had been living with a family in a fine open square of this city. On questioning the girl, I found that she had visited this village for the purpose of attending the funeral of her father, who had died of the disease. I ascertained that she had remained in her late father's house and in the open air adjoining for about two hours. She did not see her father, the coffin having been screwed down when she arrived. She neither ate nor drank during her visit; but she perceived in the house, and in the neighbourhood of it, a most sickening smell, which she could not get rid of after her return home. If this girl's attack, which lasted six weeks before defervescence was fairly established, were owing to germs or a contagium floating in the atmosphere, and derived *directly* from the intestines of some other person ill of the disease, how volatile and all-pervading must that contagium be! Yet do we find that it is so? Indeed, Dr. Corfield thinks it may be not more so than a solution of acetate of lead!

But a crucial test is better than probability, even when as strong as that derived from the consideration of such instances as those just adduced, and which might be multiplied by the score out of the experience of those who have seen or observed much of enteric fever in the country. At a large country house at which I once lived, three servants—two living in the house, and one out—were in rapid succession taken ill with undoubted enteric fever. For some time no cause could be discovered, as the house was situated a mile from any other dwelling, large, well drained, and well ventilated, and well supplied with water. Whilst the servants were ill, some of the household complained of the nasty taste of the drinking-water, which was brought to the house from a fine spring on the estate in leaden pipes, and stored in a leaden cistern. The water was noted for its purity throughout the neighbourhood. On examining the cistern several rats were found in it in a state of decomposition, and the atmosphere over the cistern, in a close situation, smelt distinctly of putrefaction. The fact came out that the servants had used arsenic spread on bread and butter for the destruction of the rats, which had resorted to the cistern to allay the thirst caused by arsenical poisoning, and so got drowned. On clearing out the cistern, the illness ceased.

That *rat broth* can thus give rise to enteric fever must, I think, be admitted; and if an infusion of rat, why not that of any other animal, or of animal matter, whether in cisterns, wells, drains, sewers, or ponds—*e.g.*, farm-houses and the cottages about them, which are are the favourite habitat of enteric fever?

It would be inexcusable to take up the valuable space of this journal by multiplying instances like those few I have mentioned. One meets every day country practitioners who say that they would believe the exclusive contagium theory of the causation of enteric fever *if they could*, but that the facts are against it; and facts *are* stubborn things, which, when we cannot conquer, we sometimes are fain to evade. But one thing I may say—that is, that had the exclusively contagious theory of this fever been universally recognised as the one and sole cause, so little faith have I in the stability of medical theories as against the observations of the senses, that I would have thrown that theory over unhesitatingly on the occurrence of the rat fever above described. For, after all, theories must be brought to the bar of experience for confirmation or dismissal. The busy practitioner who has read little of the on the other hand, will weigh the evidence afforded by a multitude of writers, and probably draw conclusions which, so soon as he has had the opportunity of personal observation, he will repudiate.

Now, there is no readier method of falling into error than by coming to conclusions on the faith of analogies (so-called), for analogies in medicine seldom hold beyond certain points of resemblance. If we take these points of resemblance, and generalise upon them, without correcting our conclusions by their contrasts and opposites, we shall commit what is a very common error indeed, but a very great one. Dr. Corfield and those who agree with him make much of the analogies between enteric fever and others of the zymotic class—viz., small-pox, scarlatina, *et hoc genus omne.* They call enteric fever an exanthem of the intestines. Are there not, they ask, the rash, the febrile condition, the high temperature, the definite duration (?), the affection occurring but once in a lifetime, and one attack preserving against another? These are the analogies. Now for the conclusions drawn from them. Small-pox and its fellows are propagated by contagion solely, by special poisons inbibed into and then multiplied in the body, and never—in these days at least—arising *de novo*, as that would be contrary to the canon of ratiocination, which does not permit of our assigning a double mode of causation when one will suffice to account for the phenomena. Therefore, enteric fever, the analogue of small-pox, is communicated by a special poison, multiplied in the intestines, and carried thence into the system of others, who are never attacked except through the means of this intermediate propagator. Then there is the analogy of the rash. But this rash is often absent, and when present it by no means bears any constant proportion to the severity of the fever. The febrile condition and high temperature must be granted, for at least these diseases are all *fevers.* But what of the definite duration? I have seen enteric fever, whose febrile period is generally some eighteen or twenty-one days, lasting four, five, or six weeks without marked defervescence, or, if this have occurred, the high temperature easily re-induced, and maintained for a period equal to that of the first accession. Now, this does not happen in the case of small-pox or scarlatina. In those it is the sequelæ, not the original febrile symptoms, which show such chronicity.

Then the affection of the mucous glands of the intestines has been likened to the exanthema of variola, &c. But in many cases we have but slight evidence of a serious affection of those bodies, nor can their ulceration be taken, without a great strain, to have more than a very distant resemblance to the rash of measles or the pustules of variola. Nor can the fact of typhoid occurring, as a rule, only once in life prove anything more than that, *as a fever*, it has that character with some others, but not with all, typhus being clearly an exception.

I will glance now at the distinctions and oppositions of character between enteric fever and the exanthemata in regard to the mode of action of its contagium, supposing there to be one. The contagious principles which generate small-pox, scarlatina, measles, &c., are, without doubt, solid, portable substances, exhaled from the person of the sick, and carried about by clothing or other substances, whence they are imbibed by the skin or lungs of the recipient. But the *materies morbi* of enteric fever does not act thus. The nurses and attendants upon the sick neither imbibe it by the skin nor inhale it by the lungs. The advocates of the contagium theory assume that it is too heavy for this. They admit, also, that, to become active, it must either have been added to fæcal or other putrid animal matters, or to drinking-water—which, by the way, is generally polluted with sewage-matter. Even given these conditions, the existence of the special poison is generally only inferred from its effects; and, although I by no means deny the existence of such a contagium, many will say that most of the cases, where the action of a specific poison is presumed, may be more easily accounted for on the pythogenic theory.

The only logical conclusion is that enteric fever is a disease having certain resemblances to the pure exanthemata—small-pox and the rest; but with differences which are specific, if not generic. Amongst these may be mentioned the lengthy and very various prodromata, the uncertain duration and frequent recurrence of the febrile symptoms, and the want of harmony between the severity of the general symptoms and that of the intestinal lesion.

As to the exciting cause, authorities of equal weight, and equally modern, attach different degrees of importance to certain observed facts, the only mode of reconciling which will be found in acknowledging *at least* a twofold origin and propagation of the disease in question, or, rather, of a primary and a secondary cause. And I think it is a fact, that the witnesses to the generality of the pythogenic, or, as we say, the *de novo* origin of the disease, very largely outnumber those who pin their faith to an exclusively contagious origin. The larger number affirm that it is impossible to ignore, for the sake of a taking theory, the evidence of their senses; the smaller number say, We can *prove* the presence of an active contagium in *some* cases; we believe it to be present in all. *Voilà tout!*

One word on the bearing of this question upon the action to be taken and the advice to be given by medical officers of health in the discharge of their very responsible duties in regard to the prophylaxis of enteric fever. How can I—who have never in any single case occurring in this city which has come under my cognisance during twenty years, been able distinctly to trace it to the operation of a contagious element—be content with recommending people to take especial care to disinfect and destroy the discharges emanating from any patient who may have enteric fever? To lay the chief stress upon this mode of propagating the disease would be to reduce the usual pythogenic action of fæcal matter to less than its due importance. I am bound, therefore, whilst not neglecting to see that the discharges are properly dealt with, to enforce every precaution against the pythogenic origin of the disease. These precautions I take to be the disuse, as far as practicable, of all well-water in thickly populated places; the ventilation of all sewers, drains, privies, and water-closets, and the shutting off of the gases contained in any of these structures from entering any dwelling-house or work-room; and generally, of preventing the lodgment of *any fæcal or other animal matter for more than a few days* in any such places; and, lastly, to make war to the death against the hideous privy and ash-pit system, which is the chief means of carrying pestilence into the atmosphere of our towns, and the main cause of that excessive amount of infant mortality by which they are disgraced. And this course I would take the liberty of recommending for adoption to my brother medical officers of health.—*Medical Times and Gazette, June* 20, 1874, *p.* 667.

5.—TYPHOID FEVER THE RESULT OF INSANITARY CONDITIONS.

By Dr. Angus Mackintosh, Medical Officer of Health, Chesterfield.

As all professional men are not yet agreed on the real cause of typhoid fever and its *modus operandi*, it will be interesting to know any new circumstances that may favour or retard the poison or infection of this type of fever. I have reported elsewhere my belief that typhoid fever in every case is the result of a specific poison being introduced into the system, either through the medium of air or water, but I have yet to be convinced that the virus which causes this condition must be conveyed from one typhoid patient to another. The following case, which happened in my district ten weeks ago, is, in my opinion, an extremely strong one against the latter theory, and consequently worthy of being recorded.

About the end of December, 1873, a collier, with wife and four children, moved from the parish of Great Barlow, in the Chesterfield Union, to Long Row, Northwingfield, in the same Union, a distance of eight miles. Great Barlow is a rural parish and thinly populated: the population in 1871 was 959. So far as known to me, there has been no fatal case of typhoid in the parish be traced, there was no chance of any poison or infection being conveyed with the man, wife, or family from their former home.

Long Row, to which the man, &c., went, consists of about thirty houses, and is also in a rural parish. Scarlet fever and measles have been lurking about the place more or less for the last six months, but there has been no case of typhoid or enteric fever in the Row for a considerable time. The house this man chose for his residence is about the middle of the Row, was previously occupied by a healthy family, and, so far as is known, there has been no enteric fever in it. The newly arrived family used the same drinking-water as the rest of the inhabitants, which is procured from a well in a field about a quarter of a mile distant, and similar insanitary conditions as to sewage emanations surround each house, the privies and ashpits being at the same distance from every door in the Row. The drainage system, which is very imperfect, consists of an open surface-drain in front, and a trapped drain two yards from each house behind. The houses are of modern construction, and have thorough ventilation.

The new-comer was only about three weeks in this place when three of his boys were attacked with typhoid fever; the youngest, eight years old, was the first seized, then the other brothers; then their sister of twelve; after a few days the mother, and a fortnight later the father. Not one in the house escaped, and up to this date, when the family is quite convalescent, no other resident in the hamlet has caught the infection. Every precaution was adopted, and plenty of disinfectants freely used.

These facts would go to prove the following conclusions :—

1. That the family was free of the infection of typhoid fever when they came to the Long Row.
2. That the constant exposure to sewage emanations appears to protect the system in some degree against the effects of typhoid virus.
3. That in some instances, individuals after a change of residence from a healthy locality to one favourable to typhoid fever are more susceptible to the poison than those long resident in it.
4. That the sewage emanations in this place were no doubt the cause of this attack, and that the stage of incubation was from fifteen to twenty days.
5. That sewage emanations are sufficient to create and produce typhoid fever, though not contaminated with the discharge of typhoid patients.
6. That unless the virus was totally destroyed by means of the regular system of disinfection carried out, this case would not go to prove the contagious nature of typhoid fever.

I may add, that since the beginning of 1874 I have had twenty cases of typhoid fever in my district, and not one of them could I trace to the presence of typhoid discharges in the water, or the effluvium proceeding from typhoid evacuations; and, what is very singular, two cases have not occurred in the same place (with the exceptions of the family above-mentioned); they were sprinkled over the district, and almost the whole were associated with sewage emanations and organic decomposition, and in some cases polluted water.—*Lancet, May* 9, 1874, *p.* 657.

6.—ON TYPHUS FEVER.

By Dr. Thomas B. Peacock, Senior Physician to St. Thomas's Hospital.

[Typhus fever is a disease which occurs more particularly in persons of middle and advanced age; its incubative or latent period lasts from ten to fourteen days.]

The eruption usually appears as small discrete spots, slightly elevated, of a dingy red colour and fading on pressure. In a short time the spots cease to be elevated, and fade less completely on pressure, and a purple mottling appears in the interjacent portions of skin. At a still later period—say on the eighth, ninth or tenth day, the spots become entirely petechial, not being at all affected by pressure. Sometimes the eruption which first appears is more discrete and more decidedly elevated, so as to bear for the time a close resemblance to the typhoid rash, but when the general mottling appears there can be no difficulty in recognising the nature of the eruption. The appearance of the rash also varies according to the condition of the patients. In young and healthy persons it is usually of a more pinky hue and continues to fade on pressure nearly the whole of the time it is out, while in debilitated persons and those previously out of health or in the aged, the spots are very livid and soon cease to fade on pressure, or they may from the first be petechial, and sometimes they form large purple blotches. In young people the eruption is often very peculiar—it assumes the form of small distinctly rounded purple spots, very closely resembling fleabites, but which under the lens are readily recognised by the absence of the central punctum. The eruption also varies considerably in its diffusion and in the period during which it remains. Sometimes it is only slight, and is chiefly seen on the abdomen and thorax ; in other cases it covers very thickly all parts of the trunk and extends to the neck, shoulders, upper arms, and thighs, and more rarely to the hands and feet. I have also occasionally observed some spots on the face. When the eruption is only slight and pale it may also be very transient, continuing for a day or two or being visible only for a short time after the patient has been in the bath ; when, on the contrary, it is copious and soon becomes decidedly petechial, it is of long duration, continuing even for ten days or a fortnight, or to near the end of the third week. In two cases, that of a mother and child which have recently been in the hospital, the rash has been very peculiar in its character. In the case of the mother there were only a few purple and rounded spots about the upper part of the thorax and on the neck when the patient was first seen, the period of attack not having been precisely ascertained, and the nature of the case was by no means clear, though the rash was regarded as probably typhus passing away. In the child there was a copious crop of spots, quite similar in character to those in the mother, over the thorax and abdomen. In both cases the fever was complicated by severe pulmonary symptoms, and the convalescence has been very protracted, probably in consequence of the patients having been in a very destitute condition for some time before the commencement of the attacks.

The time of disappearance of the eruption was observed in seven out of the ten cases in which it was present at the time of the patients' admission, and in these it continued out for 4 days, 6 days, 7 days (3 cases), 10 days, and 12 days.

In the cases in which it was apparently coming out at the time the patient was first seen, it continued 8 days, 9 days (2 cases), 11 days (2 cases), and 13 days ; and in the cases in which it came out while the patients were under observation it disappeared in 4 days, 8 days, 10 days, and 11 days. Usually as the eruption fades the patient's condition improves, and convalescence is generally fully established in from three or four days to a week after it has entirely disappeared. In cases, however, where the patient has been out of health previously, in which the prostration of strength has been extreme, or where there have been serious local complications, such as bronchitis or pneumonia, bedsores and sloughing of dependent parts, abscesses or erysipelas, the convalescence may be very protracted. Thus, in the cases in which the eruption was supposed to be coming out it appeared on the second day of illness, faded on the eleventh, and convalescence was established on the fourteenth day in one case. In others—

It appeared on the	Faded on the	Convalescence was established on the
5th day	13th day	29th day
6th „	17th „	21st „
7th „	16th „	24th „
7th (worse one day)	20th „	37th „
8th or 9th day	19th „	29th „

In the cases in which the eruption came out while the patients were in the wards—

It appeared on the	Faded on the	Convalescence was established on the
4th day	15th day	26th day
4th "	14th "	17th "
5th "	15th "	33rd "

In the case in which it was first noted on the eighth day the time at which it disappeared is not named in the report.

In the other symptoms which usually characterise typhus there was nothing unusual in this series of cases, except that in several instances the bowels were much relaxed. Usually the bowels are confined during the course of the disease, but such is not always the case; sometimes towards the height of the fever and when there is great prostration of strength, the bowels being relaxed, apparently from want of power in the sphincter to retain the fecal matter; but in several of the cases now reported upon there was profuse diarrhœa during the whole course of the disease, and this independently of any medicine having been given. Indeed, it is quite impossible to base the diagnosis between typhus and typhoid upon the confined state of the bowels in the former disease and the occurrence of relaxation in the latter, for, as I shall have again occasion to remark, it is not very uncommon for the bowels to be confined in typhoid. So, also, though, as a rule, the cerebral disturbance is more marked in cases of typhus than in typhoid, it sometimes happens that a patient will pass through a marked or even severe attack of typhus without much delirium, and retaining his intelligence to such an extent as to be able to answer simple questions put to him without any apparent difficulty. In such cases, however, the patient, on recovery, has no recollection of anything that has occurred from a very early period of his illness till convalescence is far advanced.

The general course of a case of typhus may be said to be, that the patient is suddenly seized and the disease rapidly progresses, so that he applies for admission on or before the seventh day of illness, when he is usually so prostrated as to require to be carried to bed. The eruption on the skin is then generally out, but in cases seen at an earlier period it is observed to make its appearance on the third or fourth day from the commencement of the symptoms, and it generally attains its height on or about the eighth day, when the active febrile symptoms will also be most marked, the temperature rising to 103°, 104°, or even to 104·5°. The eruption begins to fade about the ninth or tenth day, and disappears about the fourteenth, and, if there be no local complication and the patient has not been very greatly prostrated, convalescence is established between that day and the twenty-first. In slighter cases, however, the serious illness may continue for only about a week, the eruption may never be very marked, and the patient may become convalescent from the tenth to the fourteenth day; while, in very severe cases, the rash may become petechial at an early period, and may continue on the skin till near the end of the third week, and the convalescence may be very greatly protracted. Generally, in a simple uncomplicated case of typhus, the pulse and temperature fall below the normal standard at the earlier period of convalescence, and again rise when the patient takes more food and is capable of some little muscular exertion; and usually till recovery is well advanced, any slight cause, such as cold, will be attended with a very marked increase of frequency in the pulse and a renewed elevation of temperature. If death occur it is generally towards the middle or end of the second week or at the early part of the third week.—*St. Thomas's Hosp. Reports*, 1873, *p.* 5.

7.—ON THE ORIGIN AND PROPAGATION OF TYPHUS FEVER.

By Dr. J.-F. Guillemin, Médecin-Major des Hôpitaux Militaires, Paris.

From the fact that the origin of some cases and some epidemics of typhus fever has been traced to contagion, it has been by many most illogically concluded that all cases and all epidemics of the disease in question must be due to the same cause. In the interesting monograph before us, Dr. Guillemin has presented to us very important facts bearing upon this question—facts which, we believe, establish the doctrine that typhus fever may arise spontaneously in certain well-known unsanitary conditions; and that, in fact, in several remarkable instances it has actually arisen so. Dr. Guillemin commences by contesting the opinion of Professor Chauffard, expressed in a communication to the Academy of Medicine on October 15, 1872. This last-mentioned writer, reviewing the circumstances of the civil and military population in Paris and Metz during the late war, maintained that all the generally admitted causes of typhus epidemics existed in these towns in full force, and that notwithstanding there was no typhus. From this M. Chauffard not only denies the possibility of a spontaneous origin of typhus in France, but generally the possibility of the spontaneous origin of typhus epidemics. It would be sufficient, in opposition to this (says Dr. Guillemin), to show "either that the conditions which render the spontaneous explosion of typhus inevitable neither existed at Paris nor at Metz, or that cases of typhus were observed in one or other of these two towns. One is not permitted," he continues, "in order to solve the question of the origin of an epidemic disease, to limit one's self to a study of the circumstances in which it has not appeared; for, even supposing M. Chauffard's assertions perfectly established—that is to say, first, that typhus was not observed either at Paris or at Metz; and, second, that all the conditions generally recognised as leading to its production were found combined there—that by no means authorises us to infer the necessity of importation. We may with as much reason conclude that, if the action of the habitual causes of typhus have not produced its ordinary effects, this is because it has been trammelled by circumstances which have escaped observation, and which ought to be sought after." Dr. Guillemin maintains that the absence of typhus from Paris and Metz, even if true, which it was not, would not justify M. Chauffard's conclusions. It would have been necessary, in order to do this, says the author, "to pass in review the epidemics of typhus upon the origin of which we have positive information, to study the conditions in which they were produced, and to show that importation has been the condition *sine quâ non* of their appearance. This has not been done; indeed, it could not be done, seeing that there is a large number of epidemics of typhus in regard to which importation is in no way admissible."

Passing in review the work of Pringle, whom our author quotes, as supporting the spontaneous theory of the origin of typhus in individuals and communities placed in conditions of organic deterioration, subject to overcrowding and general unsanitary conditions, he proceeds to show how these causes gave rise to typhus in the French and English armies in the Crimea.

The French troops were forwarded to the Crimea in September, 1852, and the first typhus epidemic appeared in the following December, at a time when the severe cold condemned the soldiers to suffer from overcrowding and deficient ventilation. Félix Jacquot thus graphically describes the condition of the French. "After a prolonged stay in the mud of the trenches, after sentry duty, general labour, road-making, marches in deeply cut up and sinking fields, after having been soaked by rain and snow, the soldiers shivering, and very often wanting in changes of raiment, crowd themselves under the tents and huts, light if they can a meagre fire, and close hermetically all the openings with a perseverance and pertinacity against which the most pressing counsels and the most severe measures fail. The extreme uncleanliness of the men, the fœtid expirations, tobacco-smoke, the evaporation from the wet clothing, all unite to make these narrow holes pestilential. Within is typhus, without is frost-bite, pushed often to complete sphacelus of the feet. The danger appears everywhere, but the worst is within."

Almost at the same time typhus appeared in the English and Russian armies in the Crimea, and in the Russian and Turkish armies in Asia. At the end of 1855, the conditions which we have mentioned persisting with even increased force, a second epidemic of typhus broke out in the month of December, and raged with greater violence than the first. The weather was extremely cold, the thermometer falling sometimes to 7·5° or 11° below zero Fahr. The overcrowding was excessive, ambulances originally constructed for 200 or 400 men often containing twice or three times that number. It may be said, says Dr. Guillemin, that these circumstances only favoured the transmission of the disease to a large number of persons, and that the second epidemic was due to sporadic cases occurring from the time of the decline of the first. "This opinion," continues our author, "becomes very difficult to defend if we compare the sanitary state of our army with that of the English army at the same time. During the first year of the war the English, for a long period unaccustomed to war, did not know in time how to take proper measures to place their army in the best possible hygienic condition; it was as badly nourished, as badly lodged, as ours; it was decimated by typhus. But, contrary to what happened with us, the English knew how to profit by the rude lessons of experience; they understood that prevention was more easy than cure; after having recognised the cause of the evil, they did not hesitate to make the necessary sacrifices to suppress it; their soldiers were lodged in well-constructed, well-aired and well-heated barracks; there was an abundance of good food, and measures were taken to avoid overcrowding. What happened? The English army almost completely escaped the second epidemic, which affected the French army to a greater extent than the first.

"Is not this experiment on a large scale the most striking demonstration which could possibly be given of the spontaneous origin of typhus? The two armies are placed side by side on the same soil; the one, badly fed, placed in deplorable conditions, subjected to the influence of overcrowding pushed to its most extreme limits, and counting in its ranks a large number of men exhausted by intestinal affections, scorbutus, and anæmia, is a prey to typhus; the other, well fed, placed in good hygienic conditions, provided with ambulances and hospitals in which the greatest care is taken to prevent over-crowding, is spared by typhus."

In 1861 MM. Léonard and Marit reported upon a severe epidemic of typhus which appeared in two villages in Algeria. The epidemic occurred in the month of February, and was strictly confined to these two villages, which were noted for their entire disregard of sanitary requirements. The houses, or rather hovels, consisted of a ground floor almost level with the soil; there were no windows, the only openings being the doors; the lanes and courts served as so many depôts for dirt and every kind of excrement. Each of these holes would contain from eight to nine persons, with certain domestic animals in addition. The bare humid soil, tainted with ordure, formed the family couch. "Here, then," says Dr. Guillemin, "is an epidemic with which importation had nothing to do. The importation could have taken place in but two ways: either the typhus had gained these two villages by propagating itself gradually from one locality to another—and then its tract could have been followed, inasmuch as it would have affected other populations before reaching the heart of Kabylie. Now the epidemic was quite circumscribed and perfectly localised in the two villages of Seddouck and Immoula; it had not been noted previously in any of the neighbouring villages. Or the typhus had been imported by isolated individuals coming from some locality more or less distant where it existed at the same time; this supposition is as inadmissible as the first, for typhus at that time had not been observed in any other part of Algeria."

Dr. Guillemin says that the epidemic of Kabylie proves that importation is not so easy as some imagine; inasmuch as, notwithstanding that no precautions were taken to prevent importation or exportation, the surrounding villages remained free from the disease.

In the typhus epidemic which appeared in Algeria in 1868, the same unsanitary conditions which prevailed in the Crimea existed in full force. The first cases in general came either from overcrowded prisons and asylums, or from ambulances and hospitals into which the native sick had been admitted. In the spring of 1863, however, typhus had appeared in the town of Constantine, and continued there in a sporadic form "pendant les années suivantes." It was, so to speak, acclimatised there, so that the first notion of some physicians was to attribute the epidemic of 1868 to contagion from that of 1863. This view might be maintained if one ignored the fact that at the time ("meme moment") when the disease exploded at Constantine it showed itself equally in a great number of localities of the two other provinces of Algeria, "where typhus had never been observed till then either in the epidemic or the sporadic state." For, at the time when the epidemic broke out in Constantine, it showed itself at Orléansville, Oran, Tlemcen, Mascara, Bel-Abbês, &c., localities very remote from the first, and which had no direct communication with it. Under these circumstances, one is compelled to admit that no relation could be established between the endemic of Constantine in 1863 and the epidemic of 1868.

In the second part of his monograph, Dr. Guillemin treats at length of the formation of typhus centres, of which he says, the chief causes are overcrowding, especially overcrowding of the sick and wounded, uncleanliness, starvation, and the association of persons suffering from diarrhœa, dysentery, erysipelas, gangrene, &c.; and certain facts authorise him to state that this may occur in the open air. In this division of his work he mentions that in the penitentiary of Aïn-el-Bey the first case of typhus showed itself in an infirmary assistant, whose duty it was to dress suppurating wounds, at a time when there was not a single case of typhus in the penitentiary.

Speaking of Metz, Dr. Guillemin maintains, contrary to the received opinion, that there were undoubted cases of typhus in that town, and that, if it had not capitulated, these cases would have reached the dimensions of an epidemic. But the condition of Metz was by no means very bad. As to food, "without doubt it was deficient, but those who have not looked into the matter closely form a false idea of the extent of this deficiency; they forget that butcher's meat never failed, and that the daily allowance of it had been even largely increased, since 'dans les derniers temps' it reached 750 grammes, *i.e.* nearly two pounds; it is true it was horseflesh, but this remained during the whole time of sufficient quantity." Dr. Guillemin informs us that bread only became scarce about fifteen days before the capitulation. At best then it was of passable quality, and, although diminished in quantity, strictly sufficient. Only in the two or three last days distribution of bread had entirely ceased, and then only the soldiers begun to suffer from hunger, although they still had meat.

"Many among them were very feeble, it is true, but they were not cachectic; no one had observed among them scurvy, as in the Crimea, nor that feeble condition of body due to starvation; there was neither epidemic diarrhœa nor dysentery. To sum up, in the army camped round the town there were no encumbrances, no great fatigue, no antecedent disease, and, consequently, no organic deteriorations; there was, indeed, insufficiency of food, but only for a fortnight or three weeks at most."

In the last chapter of the second part of Dr. Guillemin's paper, he refers to the spontaneous origin of typhus in France, and gives several instances, such as the epidemic in the convict prison of Toulon in 1830; that of Strasburg prison in 1854; that of the prison of Nancy in 1854-55, &c. In none of these cases could importation be traced, "although," says our author, "one may always, it is true, to explain the appearance of an epidemic, allege importation even when it is not possible to prove it; it is easy to say that the importation has passed unperceived; this is a convenient proceeding, but not a serious argument; importation ought, in my opinion, to be rejected when it is neither proved nor probable."

From these statements we think it may be fairly concluded, that typhus is a disease which may arise spontaneously under certain well-known conditions; and whenever those conditions exist in sufficient force. The assertion that the origin of the disease is always due to contagion is a pure assumption, for unless it be eternal, which no one has as yet affirmed it to be, it must have commenced some time; and the conditions which gave rise to its first appearance may have given rise to some of its subsequent appearances. And there is not only no proof that these conditions are now non-existent, but much that they are existent, and that they appear and disappear at certain periods, and always under the same or similar conditions. Indeed, to such an extent is this true that epidemics of typhus may be predicted, as Dr. Murchison says, "with tolerable certainty," or, as Jacquot says, "typhus may be produced at will." "If," says Dr. Murchison, "in the case of every epidemic of typhus the first patient has contracted the disease from a person formerly affected, although it is impossible to trace the source, the contagion must needs be most potent and indestructible, which is the very reverse of the truth. The poison of typhus requires neither heat nor disinfectants for its destruction, but at once becomes inert on free admixture with fresh air. The opponents of the independent origin of typhus, in order to account for certain epidemics, are under the necessity of contending that the contagion exists in every part of the world ready to manifest itself under circumstances of overcrowding and under no other conditions; but for all practical purposes this is begging the entire question, If the poison remain passive for years so long as certain conditions are absent, but becomes active or potent so soon as these conditions come into play, it seems fair to infer that the appreciable conditions, and not an omnipresent and indestructible poison, constitute the primary cause of typhus."—*London Med. Record, Sept.* 23, 1874, *p.* 593.

8.—ON THE VALUE OF GUARANA IN VARIOUS FORMS OF CHRONIC RHEUMATISM.

By Dr. Edward A. Rawson, Assistant Surgeon to the Carlow Infirmary.

Suffering severely from lumbago, and finding all vaunted remedies fail, I tried guarana as an experiment. I took 15 grs. blended with hot water, and added cream and sugar. For twenty-four hours afterwards I had a delightful relief from pain. I thought it must be a coincidence; but, on a return of the lumbago, took another dose in the same manner and with a similar result. I gradually increased the dose to 40 grs., and took it regularly, once a day, for about a week. The lumbago disappeared. I gave up the guarana, and in a few days the pain in the back returned. A 40 gr. dose removed it, and it did not return for several days afterwards. Now, whenever it does, I have my remedy at hand. During the last month I have experimented largely with guarana on a variety of patients, rich and poor. The results vary. When the pain is acute, coming on with sharp stings, guarana acts like magic; when it is of a dull, aching character, the drug is slower in its action, and several doses must be taken before any decided benefit can be perceived.

I have come to the following conclusion, viz., that whenever the fibrous envelopes of nerves, the aponeurotic sheath of muscles, the fasciæ or tendons are the parts affected, guarana gives if not instantaneous, at least very immediate relief, which will last from twelve to twenty-four hours; and I confidently expect that perseverance in the use of the drug, gradually increasing the dose up to forty grs., will entirely remove any of the above mentioned kinds of rheumatism.

Of the good effects of guarana on nervous hemicrania there is no doubt; and I trust it will prove, in other hands, as valuable against rheumatism as it has in mine.

I find guarana was examined by Martins in 1829, and by Gravelle in 1840. According to them "it stimulates, and at the same time soothes, the gastric system of nerves, and reduces the excited sensibility of the cœliac plexus, thereby diminishing febrile action, and strengthening the stomach and intestines, particularly restraining any excessive mucous discharges; at the same time increasing the action of the heart and arteries, and promoting diaphoresis."—*Irish Hospital Gazette, April* 15, 1874, *p.* 120.

9.—TREATMENT OF ACUTE RHEUMATISM BY IMMOVABLE BANDAGES.

Dr. Oehme reports the observations made by Heubner in the hospital at Leipsic, on the treatment of acute rheumatism by fixing the parts immovably. Similar experiments had already been made by Seutin and Gottschalk; and in more recent times by Concato of Bologna, with good result. Heubner used pasteboard; but for small children and restless patients, the plaster of Paris bandage was necessary. In applying the pasteboard splints, the upper limb was bent at a right angle at the elbow, and the leg was straightened at the knee; the splints were well wadded, and fastened by bandages. The apparatus was generally applied immediately on the admission of the patients, and was allowed to remain, not only until all pain and swelling had left the joint, but until the constitutional symptoms had disappeared, and especially until the temperature had returned to the normal standard. The results of this treatment were extremely favourable as regarded the pain, the fever, and the duration of the disease. Even when the pain had been most severe, the fixing of the part was followed in a few minutes by so great an amount of relief, that the patients were almost free from pain. Of forty-five cases collated by Dr. Oehme, this result occurred in all without exception. After a time, varying generally from one to two days, all pain finally disappeared in the joints which were fixed. The period of final cessation of pain is later in those joints —the hip and shoulder—which cannot be so securely fixed as others. To show the effect on the duration of disease, Dr. Oehme gives tables, comparing forty-five cases treated by fixing the joints with forty-five similar ones treated otherwise. While in the latter the average duration of the pain was 21·75 days, in the former it was only 13·11 days. The treatment by fixing the joints had also a favourable influence on the duration of the fever, which was distinctly shortened. It seemed also as if the fixation of a joint acted as a prophylactic in preventing the other joints of the same limb from being affected. From the observations now made, it may with safety, Dr. Oehme thinks, be asserted that the treatment of acute rheumatism with the immovable bandage reduces the pain to a minimum, shortens the duration of the fever, and essentially cuts short the course of the whole disease.—*British Medical Journal, April* 25, 1874, *p.* 550.

DISEASES OF THE NERVOUS SYSTEM.

10.—ON THE TREATMENT OF SCIATICA.

By Dr. Francis E. Anstie, Physician to the Westminster Hospital.

Except in a very small and well-defined class of cases, there is no pretence for speaking of sciatica as a rheumatic disease.

One constitutional disease, however, not only is capable of producing sciatica, but probably does so with unsuspected frequency—viz., constitutional syphilis. It had always puzzled me to read of the marvellous successes which some observers had obtained with iodide of potassium in sciatica (seeing that in the ordinary forms of the disease I never found it useful), until I came across cases in my own practice where syphilis was evidently the cause, and in which I obtained immediate success by the use of that drug. I would advise you, in every case of sciatica that does not quickly yield to the kind of treatment which I shall presently recommend, to inquire very closely into the history of the patient as regards the possibility of his having had syphilis: and to show you the necessity of not being too readily diverted from the quest by apparent improbabilities, I may mention that one of the most marked successes I have obtained was in the person of a gentleman whose peculiar position seemed to put syphilis entirely out of the question. Here the primary syphilis dated as many as thirty years back, but a clear history of subsequent, though not severe, constitutional symptoms was obtained, and the treatment by iodide of potassium in large doses at once effected a brilliant success.

In the vast majority of cases of sciatica, however, you will find no trustworthy evidence of any diathetic condition resembling either gout, rheumatism, or syphilis; and you will be driven to the conclusion that the disease is a neuralgia pure and simple. Now let us ask ourselves what are the principles which should govern our prognosis and treatment of neuralgia in general and of sciatica in particular.

In regard to neuralgia in general, we are in the unfortunate position of lacking any positive information as to the precise seat and nature of the pathological change which is at the root of the malady. I say "positive" information, because post-mortem examinations of persons who, at the time of death, were suffering neuralgia, have been so rare that practically, from this side of the matter, we know but little. But we know enough to be quite certain that the apparent site of the pain need not be, and indeed scarcely ever is, the seat of the mischief which causes it. It is demonstrable, from accumulated clinical facts, that pathological causes which irritate the nerve high up in its trunk produce pain at the peripheric distribution; and it is also known that sensations which are excited by irritation of the central origin or nucleus of a sensory nerve, are, by a regular physiological law, referred to the periphery. As regards sciatica, we happen to possess precise knowledge of the immediately *exciting* cause in a considerable number of cases; for there is a rather large number of recorded instances in which irritative pressure of a loaded bowel, a gravid uterus, or a tumour, upon the nerve within the pelvis, has set up pains, distributed in the peripheral manner already described, and disappearing instantaneously on the removal of the cause of irritation to the trunk. But in regard to all neuralgias, a strong argument for the belief that the cause operates centrally rather than peripherally, arises from the fact that the pain simultaneously affects individual twigs of nerve which are widely separated from each other. In a facial tic, *e.g.*, it is not at all uncommon to find that the pain centres in two points—the supra-orbital (above the notch of that name) and the auriculo-temporal (in front of the ear); the former representing the frontal branch of the first or ophthalmic division of the trigeminus, and the latter representing the auriculo-temporal branch of the third division. Now it might be said that the operation of some peripheral cause, such as cold, had excited pain in both these points of nerve; but clinical experience entirely forbids us to explain the matter thus, because the independent affection of widely separated twigs of the same nerve is quite as frequently observed where it is perfectly obvious that no peripheral irritation has been at work. If, then, the pain in two widely distant twigs of the same nerve were not caused by irritation acting at the apparent peripheral site of the pain, we may next inquire whether the mischief is in the trunk of the nerve; and in a considerable number of cases of neuralgia we shall find that a portion, at least, of the mischief was caused in this way. Irritative pressure upon the trunk of a nerve has frequently, at any rate, so much share in the production of a (peripherally-felt) neuralgia, that the latter disappears immediately on its removal; thus a syphilitic periostitis may cause irritative pressure on a nerve within a bony canal, and anti-syphilitic treatment may immediately remove the pain. But we are bound to ask ourselves whether the irritation of the nerve-trunk is the whole matter, and for this reason—that various nerves, and especially the sciatic, from their anatomical position, are extremely frequently pressed upon by viscera, or by tumours of various kinds, and that if this cause were alone sufficient to produce neuralgia, that disease ought to be a hundred times more frequent than it is. It is not enough to prove, as we readily can, that the immediate cause of some cases of sciatica was the pressure of a loaded bowel, for, considering the very great frequency with which people carelessly allow their bowels to remain chronically constipated, sciatica ought to be one of the commonest diseases in existence, if the mere pressure were in itself enough to set up the disease. But sciatica is far from being a common malady, and we are therefore compelled to suppose that a predisposition to neuralgia existed in the nerve.

Now, in favour of the idea, that some *predisposition* is usually, if not always, present in neuralgic patients, and that peripheral irritation only serves as the final factor which elicits it, there is a very large mass of striking facts. Of these the most important are those of heredity: nothing is more certain than that neuralgic patients nearly always descend from families in whom the disposition to nervous diseases of various kinds is markedly developed. For detailed proof of this I must refer you to my work on "Neuralgia and its Counterfeits" (Macmillan), merely observing that sincethe publication of that book I have received a very large amount of corroborative evidence of the position now laid down. It has, indeed, been very confidently ascribed by a recent writer, that, whatever may be the case with neuralgias in general, no proof can be made out of the hereditary character of sciatica; to which statement I can only reply that the very considerable number of fully noted cases of sciatica which I have collected from my own observation, entitles me to say that sciatica holds a similar position to that of facial or other neuralgias as regards the question of direct and indirect inheritance. It is an offshoot of that neurotic constitution, the inheritance and the alternate transformations of which, in successive generations and different individuals, is so marked a feature in the history of many families. I do not wish now to occupy your attention too long with theoretical considerations, but in the work to which I have referred you you will find that I venture to believe is very strong evidence in favour of the opinion that the mysterious neurotic inheritance consists of an inherited tendency towards imperfect building of the central nervous system—that last and highest expression of the increasing tendency to differentiation of organs which corresponds with the upward scale of development in the animal series. I believe that sciatica follows the same rule which pertains to other neuralgias, and that underlying the fact of the external provocation which may have immediately induced the attack, there was a predisposition, the origin of which is to be traced to a feeble and mobile constitution of the centres in the cord from which the sciatic nerve takes its rise.

We will assume, then, that sciatica, in nearly if not quite all cases, requires a predisposition of that kind which descends in families that have marked tendencies to nervous disease. What, if any, are the particular circumstances which specially distinguish sciatica as regards the tendency to its immediate provocation, and the circumstances which are likely to make it a transitory or a lingering affection?

In the first place, the sciatic nerve is, beyond all others, obnoxious to the evil influence of muscular movement. Its large size, and its position among the muscles of locomotion, expose it to continual drags and pulls, and if once neuralgic pain has been set up in it the slightest amount of walking is sure to aggravate it and keep it up. And then, unfortunately, the exposed position of a large part of the nerve, from the sciatic notch downwards, makes the sitting posture equally bad with locomotion. In fact, there is no position, except lying prone upon a couch, which does not more or less worry the nerve. It is probably to their less energetic habits of locomotion that women owe their remarkable immunity, as compared with men, from sciatica. The most thoroughly obstinate and intractable case that I have seen in a woman was one in which the patient would not, for a long time after the commencement of her illness, take the physical rest which was imperatively required, but continued to limp about for hours daily. By the time this had been going on for some three months the case was thoroughly hopeless as regarded cure.

No disease is more markedly influenced by age than sciatica. It very seldom occurs before the age of twenty, and the zenith of its frequency is between the ages of forty and fifty. There are, indeed, two quite different types of sciatica, putting aside the gouty, the rheumatic, and the syphilitic varieties (which have no constant relation to age). The sciatica of youth may be a severe complaint, and if injudiciously treated may become intractable and even wholly incurable; but, as a rule, it distinctly tends to spontaneous termination, except in so far as it is kept up by some vicious habit of body or mind. The effect of imprudent efforts to "walk it off" may convert what would have been a very trivial and temporary attack into a very obstinate one. Sexual excesses, especially masturbation, have an unquestionable tendency to provoke and to keep up sciatica in comparatively young persons, and alcoholic intemperance is a possible influence in the same direction. But it is essentially the neuralgias of later life—those which come on from the age of forty to fifty or later—which prove intractable and often incurable. The great rule, which holds true of all neuralgias, that the commencement of the process of bodily decay inaugurates a period in which the cure of these maladies becomes increasingly more difficult, applies in full force to the case of sciatica; and more especially is this effect observed where the degeneration of arteries forms a prominent and early feature in the tissue-degradations of the period of vital decline.

Brief and imperfect as this account of the pathology and causation of sciatica has been, it will suffice to indicate at any rate a more rational scheme of treatment than those which are adopted by routine practitioners. If we are to take first the varieties of the disease in which there is the most decided indication for treatment, we shall certainly begin with the syphilitic; and here I wish to repeat the caution already given as to not accepting too readily the idea that syphilis is out of the question. You will be most tempted to make this mistake when your patient is a lady of good character. But remember that she may have been infected by her husband, and that this may have happened (in conception) without the occurrence of any primary sores. Inquire carefully in such cases for any history of eruptions or sore throats, but especially ascertain whether there have been any abortions or still-births. Where the patient confesses that there has been chancre, you must not give up the syphilitic hypothesis simply because a number of years have elapsed with few or no recognizable symptons of constitutional infection; this is a point which has been copiously illustrated in the valuable researches on syphilitic nervous diseases generally which have been going on during the last twenty years. The line of treatment is quite simple. You administer iodide of potassium in rapidly increasing doses till you reach as much as from sixty to 120 grains of the drug, or even much more, in each twenty-four hours. This very rarely fails to produce a rapid and complete cure; but if it should prove ineffectual you may resort to the bichloride of mercury, sixty to eighty minims of the liquor ($\frac{1}{16}$ to $\frac{1}{12}$ grain) thrice a day. Very often it will be advisable to give cod-liver oil at the same time.

In the few cases of clearly rheumatic origin, also, we get a clear indication for treatment: the use of iodide of potassium with bark will usually be found to remove the inflammatory enlargement of the nerve, and give speedy relief to the pain. The prolonged use of Kreuznach or Woodhall Spa water is desirable, in order to render the cure complete and permanent.

In the cases where we have reason to believe that the conjunction of the gouty with the neurotic temperament is exercising a pernicious influence, the chief practical deduction must be that the patient should very sedulously avoid beer and all saccharine wines, and should be very moderate in his total allowance of food, especially of meat and other distinctively nitrogenous foods. The careful and prolonged use of Vichy or Neuenahr water may do great good.

But, after all, the gouty, rheumatic, or syphilitic sciaticas form but a small proportion of the mass of cases which may be encountered in practice. The important question, in dealing with ordinary sciatica, is—What am I to do with a disease which is essentially a neuralgia, but which is influenced by the special circumstances connected with the anatomical position and the functions which belong to the sciatic nerve?

In dealing with sciatica as a neuralgia pure and simple, we are fortunately provided with means which will give such immediate relief as will greatly solace the patient, and inspire him with that faith in his ultimate recovery which is always so valuable to the sick, and especially to the nervously sick. I have already explained how necessary absolute rest of the part is, and you will commence your treatment by arranging a proper couch on which the patient is to lie all day, and by making him understand that he is not merely never to put his foot to the ground (except for absolutely necessary purposes), but that he should always lie either prone on his face or (for a few minutes' change) on the opposite side to that affected. If he be in pain at the moment of your first visit, I advise you to give him a hypodermic injection of one-sixth of a grain of acetate of morphia on the spot. All this is only preliminary; it gives you time to look about you, and deliberately select your line of treatment.

In dealing with simple neuralgias there are four possible main classes of remedies—(1) constitutional, which include the regulation of diet and the employment of such medicines as are, in fact, supplementary aliments; (2) the removal of obvious sources of possible irritation; (3) the narcotic-stimulant medicines; (4) local applications.

As we are not dealing now with gouty sciatica, what I have to say concerning alimentary treatment is mainly in the direction of insisting on a very nourishing diet, and especially the use of fats, beginning with cream, and going on to cod-liver oil. To this we may add the use of iron or arsenic, or both, in anæmic cases.

Dr. Lawson has correctly pointed out that sciatica is sometimes connected with an acid dyspepsia and a tendency to pyrosis. I believe that these cases are less common than he supposes, and that they are mostly found in those who happen to be the subjects of gout as well as of sciatica. At any rate, wherever such symptoms are found they should at once be met by the administration of effervescing alkalies, with small doses of quinine—say a grain of quinine in four ounces of Vichy or of Apollinaris water three times a day. The quinine is here given simply as a restorer of the digestive tone, not with any idea of producing a specific effect upon the neuralgia.

The only cases of sciatica in which quinine is likely to produce specific effects are those in which malaria is the exciting cause, and these are (in England) so rare that I have for practical purposes disregarded them. It is enough to say, here, that when we do encounter such cases we must treat them with the same full doses of quinine, administered before an expected paroxysm, as we should employ in ague itself.

2. The removal of obvious sources of possible irritation refers chiefly to two things. *Cold* should be guarded against by making the patient wear (night and day) a pair of thick flannel drawers. Intestinal irritation should be guarded against by thoroughly evacuating the intestines; it is best to do this by means of a good stimulant enema (ol. ricini ℥ ss., ol. terebinth. ʒ ss., gruel Ojss.) thrown high up.

3. Of the narcotic stimulant remedies, morphia, hypodermically injected, is much the most frequently useful, though it is scarcely that panacea for the disease which some have represented it to be. When I tell you that it can rarely be judiciously omitted in the early treatment of sciatica, I am very anxious that you should receive that statement in a reasonable way. The supreme utility of hypodermic morphia is due to the certainty with which (in moderate dose) it will cut short the pain without inducing narcotic depression. Pain is a complex and mysterious phenomenon, and among the many interesting facts concerning it is this—that the long continuance of pulsations, so to speak, of more or less rhythmical agony has a peculiar shattering effect upon the nerve, which leaves it *far more liable to pain than before.* Therefore you will do wisely to prevent, at any necessary cost, the patient from ever having more than a few minutes of acute pain at a time. This can usually be accomplished by immediately using the hypodermic syringe when the attack commences; and at this period of the illness you may even give one-sixth or one-quarter of a grain twice in each twenty-four hours if necessary. But you are on no account to look upon hypodermic morphia as other than a temporary expedient to gain time for the recuperative powers of the system, aided by appropriate tonics, to conquer the morbid tendency.

4. Of local applications for sciatica (or any other neuralgia) some are used with one intention, some with another. (*a.*) There is a class of local remedies the sole action of which is to shield the terminals of the nerve-twigs from irritation by paralysing their sensibility; the result being that the nerve and nerve-centre enjoy comparative repose while the influence endures. Veratrine ointment is one example; aconite liniment another. In using the former, you will do well to employ at first an ointment only half as strong as that of the Pharmacopœia (four grains to one ounce, not eight), or, if your patient has a delicate skin, you will produce inflammation and pustulation instead of simply numbing the nerves. Lin. aconiti, applied with a broad paint-brush, is more convenient and more certain, but very expensive where it has to be applied over a large surface.

(*b.*) Mild stimulation of the nerve is, however, on the whole by far the most satisfactory local method of treatment. This is done in two ways, either by blistering or by the use of the constant current. Blistering must always be used with precaution, and is almost wholly inapplicable to the irritable skins of *aged* patients. It is usually best to commence with the application of a blister, not directly to any of the painful points, but by the side of the spine at the junction of the lumbar and sacral portions. When the epidermis has been well distended with serum, the bladder is to be pricked with needles and drained of fluid without breaking the skin at all. If the malady prove at all obstinate, a series of these "flying" blisters placed successively near to (not actually upon) the foci of greatest pain will prove highly serviceable.

But in no instance of sciatica ought we to allow the pain to continue very long before putting in action a remedy which has approved itself in the hands of some of the best observers in Europe, of the highest value for sciatica,—I mean the constant battery current, a remedy so powerful (particularly in this form of neuralgia) that, but for the expense and trouble attending its use, it should be employed as the sole treatment in three-fourths of the cases of sciatica. It is absolutely necessary to have a good instrument, such as Weiss's or Stöhrer's constant-current machines. From twenty-five to thirty-five cells will commonly be required, and the best method of application, on the whole, is the following:—The negative pole (the poles are broad moist sponges) is applied as nearly as possible opposite the roots of the nerves which form the sciatic, and the positive pole is applied in succession to the several foci of pain. The poles should be kept continuously applied for about three minutes at each of these situations, and this should be done either once or twice daily.

The prognosis of sciatica depends mainly upon the age of the patient, in the true physiological sense, and on the length of time during which the malady has already lasted. Eulenburg speaks of it as among the most curable of neuralgias, and so it doubtless is—in favourable circumstances and with the adoption of all proper remedies. But it may be rendered utterly intractable, either by the failing nutrition of the organism in the stage of bodily decline, or by the carelessness of the patient, or of the doctor, in not strangling the disease at an earlier period in younger subjects. No disease with which I am acquainted offers more opportunity for medical energy to find itself rewarded, or for medical supineness to incur not undeserved discredit.—*Med. Times and Gazette, June* 13, 1874, *p.* 637.

11.—THE EMPLOYMENT OF GELSEMINUM IN FACIAL NEURALGIA.

[Dr. J. SAWYER, of Birmingham, writes as follows:—]

I desire to draw attention to the value of gelseminum sempervirens in the treatment of some forms of odontalgia. Since reading Dr. Wickham Legg's paper, published in May last, advocating the employment of the drug in cases of odontalgia, I have frequently used the remedy for the relief of toothache and some allied affections among my outpatients. Gelseminum, commonly called the yellow jasmin, is not very generally known to English practitioners, although it has been largely used in medicine for some years in the United States. The drug seems to act mainly upon the nervous system, impairing the sensibility of the sensory nerves. American pharmacists prepare a liquid extract; the dose of the powdered root is from one to two grains; I have used a tincture, made from two ounces of coarsely powdered gelseminum root macerated in a pint of rectified spirit. In hospital outpatient practice, we meet with a large number of cases of neuralgic pains in the face and jaws, associated with carious teeth, but unconnected with any evident local inflammatory changes. The patients are frequently badly nourished women. In such cases, I have given the tincture of gelseminum, in doses of fifteen minims every six hours, in an ounce of dill-water. Out of about twenty cases, I do not think the use of the remedy has failed to be followed by decided and lasting relief in more than three or four instances. The pain did not usually disappear till after the third or fourth dose. I have seen enough of the employment of gelseminum, to feel sure that more extended experience and careful investigation of its action will establish the drug as a valuable addition to our materia medica.

[Dr. E. Mackey, of Birmingham, gives the following cases:—]

Case 1.—S. W., aged 30, confined eight months ago, not suckling, anæmic, for twelve months had been suffering with grinding, shooting pain in the teeth, jaws, and temples. The pain was generally worse from 9 to 10 a.m., sometimes at night. Eating brought it on. She had several stumps, but the dentist said that nothing was to be done. She had tried many medicines. She was ordered tincture of gelseminum, ten drops in water thrice daily. She was relieved by the first dose, and the improvement continued whilst she was under observation and taking the medicine—two to three weeks.

Case 2.—T. B., aged 39, complained of violent stabbing pain from the mastoid process, over the side and front of the head, coming on from 3 to 6 a.m. This had continued for three weeks. There was no known cause, except a fall on the part seven months ago. His general health was good. He was ordered five grains of quinine before the paroxysm, fifteen grains of ammonium chloride thrice daily, and liniment of chloroform. He got no definite relief, except from the last mentioned, and, at his next visit, was ordered three drops of tincture of aconite. From this he had much relief for a few days, when he relapsed. Pain was now felt more in the jaws and left side of the face. He was ordered ten drops of tincture of gelseminum, and got distinct and decided relief, which continued whilst under observation.

My note-book contains now many similar cases, which warrant me in adding my testimony to that of Dr. Legg, and to that of my friend and colleague Dr. Sawyer. I have ample evidence of the power of gelseminum to relieve pain, especially—I do not say only—in branches of the fifth nerve; and medicines that relieve pain are the most valuable we can have. In toothache from caries or irritated nerve, I do not know that we often think of any but local treatment, unless sometimes aconite or large doses of quinine; yet in very many cases, gelseminum will relieve markedly. Its use, as may be said of most neurotics, is not free from some danger; but I have only seen unpleasant symptoms once, and from an American liquid extract in doses of five to ten drops (the dose marked on the label). These symptoms were dimness of vision and extreme prostration. They soon passed, but may serve to remind that the evidences of the physiological action of the drug are, loss of sight, double vision, headache, paralysis. Several cases of accidental poison have exhibited these; the few recorded fatal ones were all of children to whom extravagant doses had been given. The preparation I now use is a tincture made according to the usual pharmacopœial mode (*e.g.*, as tincture of aconite), but with two ounces of root to the pint of spirit. It was first prepared here by the hospital dispenser, Mr. Dewson, and is now kept by Messrs. Southall. The dose ordered was from five to twenty drops, and with this, among a large number of out-patients, I have had no cause for anxiety. As the "Therapeutic" corner of our Journal is now, and usefully, occupied concerning tetanus, I will point out that gelseminum, from its paralysing power, ought, *a priori*, to be of use in that malady.—*British Medical Journal, May* 2, 1874, *p.* 576.

12.—ON ELECTRICITY IN PAINFUL AFFECTIONS.

By Dr. G. Vivian Poore, Assistant-Physician to Charing Cross Hospital.

[Electricity would almost seem to be one of the most powerful anodynes which we possess, and its power in this respect is hardly as yet appreciated by the profession. In order to distinguish between real and imaginary effects, especially among the female hysterical class of patients, it is always well to begin with a mock application of it. If we could only in the same way test the actual efficacy of many other therapeutic agents which we employ, our knowledge of treatment and the effect of drugs would become more accurate than it is.]

Electricity will often cure pain, and much more often will alleviate it; and as an alleviator of pain it is not open, if properly used, to the objections which are applicable to most other anodyne therapeutic applications. By teaching a patient what are the anodyne effects of morphia, chloral, Indian hemp, or alcohol, we may destroy his sufferings only at the expense of his physical and moral well-being. Again, the after-effects of anodyne drugs are often only less disagreeable than the symptoms which they have removed. Electricity is not open to these objections, for, if it does no good, it does not, I believe, do any harm; and for this reason, if for no other, it deserves every trial as an anodyne. For a local pain, counter-irritation by means of a blister is often of great use; but there is this practical objection to the use of blisters, that if the pain return before the blistered surface has healed, we are debarred from making a second similar application to the same spot. Electricity is a counter-irritant, and a very powerful and quickly acting counter-irritant; but it is something more than this—it has undoubted specific effects upon painful nerves; and it is not open to the objection of other counter-irritants, for it will not cause depression and exhaustion, and, if used with due care, may be applied again and again to the same region of the body.

Do not misunderstand these remarks, which are not meant as a crusade against time-honoured and invaluable remedies, but merely as an incentive to you, when you have (as in hospitals) the necessary apparatus at hand, to try the anodyne and counter-irritating effects of electricity.

All three forms of electricity are employed for the relief of pain, but the most generally useful for such purposes is undoubtedly galvanism.

You will find that some writers, when dealing with the anodyne effects of the galvanic current, lay great stress upon always placing the *anode* upon the painful spot. It is always pleasant to be in accordance with physiological facts, and it would increase our knowledge if we could be sure that the pain of neuralgia were always due to an exaltation of physiological properties which could be subdued by the production of anelectrotonus. Neither of these facts is certain, and you will find that Meyer—certainly an authority—says that the positive pole is to be applied near the centre, and the negative (the cathode) on the painful spot. For my own part, I have employed galvanism with much success for the relief of pain, but without hitherto paying any attention either to the direction of the current or the position of the poles. There is no relation, etymological or otherwise, between *anode* and *anodyne*. There are many cases of neuralgia on record which have resisted every known method of treatment, but have yielded after a few applications of the constant current. In employing the current for this purpose, I think the true *locus morbi*, if it can be made out, should be included between the poles. If there is tenderness over any of the vertebræ corresponding with the part of the cord from which the painful nerves arise, one of the rheophores should be placed at or a little above this spot. The other rheophore should be applied seriatim to the various "painful spots" along the course of the nerve. In employing galvanism for neuralgia of the trigeminus, you must be careful—because of its effect upon the eyes—not to use too strong current.

In some cases of neuralgia the pain is much aggravated by using the muscles which derive their nervous supply from the painful nerve. In these cases you will do well, when you employ the current, to practice during its continuance a rhythmical exercise of the affected muscles. In this way the muscles, which have been thrown *hors de combat* by the pain, recover their tone, and it is only reasonable to suppose that the healthy exercise of the muscular and nervous function has a beneficial effect upon the healthy nutrition of the entire nerve, from its terminal twigs to its origin in the spinal cord.

The rational treatment of pain is, as with every other ailment, to remove the cause; and the complete and often immediate cure effected in many cases by electricity would seem to prove that the change produced in the nerves by the current is sufficient for this purpose. Many cases of neuralgia have been cured in this way at once. More than once I have completely removed a troublesome headache, not only of the transient type, but also of the migrainous periodic type, by a single application, for a few moments, of a weak current to the head. The pain under the left breast, so common in anæmic women, is often readily amenable to electrical treatment; and my friend Dr. John Williams, of University College, tells me that he has often found ovarian pain yield to the application of galvanism. When, however, the cause is something evidently beyond the reach of electricity we may nevertheless alleviate the pain for a time, often for many hours, by employing a galvanic current.

I remember the instance of a patient of this hospital who came to me suffering from "lumbago." That the "lumbago" was possibly caused by serious mischief in the cord or its coverings was evident by the great tenderness of the spinal column, the sensation of numbness in the feet, and occasional attacks of spasmodic pain shooting into the lower limbs. The patient was a poor basket-maker, and when first he came under my care he was scarcely able to move because of the pain. Counter-irritation and drugs having given him no relief, I determined one day to try the effects of the galvanic current. He was then unable to walk, and was obliged to perform the journey to and from the hospital in an omnibus. The galvanic current was applied to the back, the pain was completely alleviated, and he was able to walk away with little or no difficulty to the nearest railway station, half a mile off. This alleviation lasted about twenty-four hours, when his troubles returned. After this upon several occasions he presented himself for the purpose of having the current applied to his back, for its application was always followed by many hours of freedom from pain, while nothing else seemed capable of giving him relief. I then lost sight of him for six months, when he again presented himself in the out-patient room, with a large lumbar abscess and every sign of caries of the vertebræ, and he was admitted to the hospital to be under the care of the surgeons. I mention this case merely as an illustration of the power of the current to alleviate pain, notwithstanding that such pain may be caused by the gravest, most permanent, and incurable organic changes.

Another instance no less remarkable was in the case of a middle-aged lady, who was sent to me by my friend Dr. Anstie. For more than a year she had been a martyr to occipito-cerebral neuralgia of the left side, of a most excruciating character. An examination of the left side of the occiput and neck revealed slight swelling, and, on deep palpation a cracking sensation could be felt in the region of the transverse processes of the first two or three vertebræ. Whether this was due to rheumatic inflammation or caries one could not determine, but doubtless this mischief, whatever it was, was the cause of her trouble, and the patient was accordingly informed that galvanism would probably do nothing for her. Her pains were much aggravated when the trapezius or the rotators of the head were moved. The current was employed about half-a-dozen times, the positive pole being placed at the occiput, and the negative moved in a labile fashion over the side of the neck and shoulder. The muscles were rhythmically exercised at the same time. Whenever the current was employed her pain was alleviated, the alleviation lasting for varying periods. On one occasion she was free from pain for nearly two days—a blessing which she had not enjoyed for months. Of course she was not cured, and she is probably now as bad as ever; but it surprised me not a little to find that, in the face of a grave permanent cause, we could give so much alleviation.

I have several times employed the current to alleviate the pains of intestinal colic, and often, though not always, with success, which in some cases was complete. I have, on the other hand, found many cases of pain in which the current apparently did no good whatever.

The galvanic current is, on the whole, the best for relieving pain, because it is itself the least painful form of electricity. Some writers—Meyer amongst them—strongly recommend faradisation, applied by means of a metallic brush or in the form of the "electric moxa" to the painful spot. Dr. Tibbits records a case of sciatica which was cured by franklinisation, and also a case of facial neuralgia cured in the same way. The method employed was to "charge" the patient, and then to "take sparks" along the course of the affected nerves.

There is a class of painful and sometimes semi-paralytic affections the pathology of which is shrouded beneath that most connotative word "rheumatic." The ordinary "stiff neck" is one of these. A man sits or sleeps in a draught with his neck in a strained position, and the next morning he cannot move his head without suffering agonies of pain. Again, a coachman, exposed to all weathers on his box, finds that the deltoid muscle of his left (the driving) arm, from exposure to wind and damp, and from being kept in one position, refuses its office; he is unable to raise his elbow, and the attempt to do so causes him much pain. The stiffness felt in the adductors of the thighs after a long ride in the wet, and the pain and stiffness about the region of the right shoulder which torment old sportsmen who have used the gun too much, belong to the same order of ailments.

Again, there are those various conditions which cause the symptoms of true "lumbago," situated at one time, I suppose, in the muscles of the back, and another time in the thick aponeuroses which cover them. Sciatica is another of the "rheumatic" ailments, the characteristics of which are that the pains do not follow the lines of nerve distribution very exactly, and that the pain is as much "muscular" as "nervous" in character, and is much aggravated by muscular movements.

Now in the vast majority of these cases you will find that faradaism and galvanism, but especially the latter, act in a way which is little short of magical. If I were asked to state for what class of diseases electricity was of the greatest use, I should have little hesitation in saying the class which we are now discussing. I believe it to be essential that the painful muscles should be made to contract thoroughly. You may either do this by employing faradaism, and so causing a strong artificial contraction; or you may use the constant current, and while the patient is under its anodyne effects you may make him thoroughly exercise all the muscles implicated.

Not long ago the coachman of an eminent London surgeon came to me complaining of the "rheumatism" of his left shoulder. On examining him, I found that his left deltoid muscle was almost useless to him. He could not, and had not, he said, for many years been able to raise his elbow, except in a very slight degree, and always with pain. He had exhausted the various liniments and oils, but with no benefit. I strongly faradised his deltoid muscle, and in a few minutes he was able to raise his elbow quickly and repeatedly above the level of his shoulder. You will come across many cases in which a cure may be effected quite as quickly and completely.

A very obstinate case of "lumbago" was lately put under my care in this hospital by my friend and colleague, Dr. Julius Pollock; and, as it shows very strongly what electricity will do in such cases, I will give you the facts.

W. G., a brass-finisher, aged thirty-five, was admitted as an out-patient on the 16th of July, 1873. He was bent almost double, walked with the greatest difficulty, complained of intense "lumbago" pain, and gave the following history:—He had been accustomed to work a good deal with the lathe, standing up up and moving the treadle with his right foot. About six years ago a pain came on gradually, affecting the back of the thighs and hips, which the medical man attending him called sciatica. The pain became so severe that he was obliged to give up work, and had not since been able to resume his employment. The pain left his legs, and finally settled in his back; and was most marked in the lower dorsal and lumbar regions, of a plunging, shooting character, aggravated by the slightest movement or the lightest touch, and implicating not only the dorsal muscles, but the intercostals as well. Movement had become so difficult that he was often as much as two or three hours in dressing and undressing himself. The back was considerably "bowed," the curvature being far more noticeable at night than in the morning. There was no indication whatever of any disease of the vertebræ, and the ailment seemed to be mainly muscular.

The positive pole was placed at the upper part of the spinal column, in the middle line, and the lower part of the back, and the lateral regions of the thorax were thoroughly sponged with the negative pole. The sponging had the immediate effect of annulling his pain, and produced great redness of the skin of the back and chest. While the current was being used he was made to exercise his muscles, to flex and extend his back, to rotate his spine, and to inspire and expire rhythmically and repeatedly. The result of this treatment was his rapid improvement, and he has been enabled to resume his employment, which he had discontinued for six years.

We have had before us at a previous lecture a patient who has been greatly benefited by galvanism. He was a middle-aged man, and when he applied for relief among the out-patents of this hospital he was suffering, and had suffered for nine months, from that most troublesome annoyance "tinnitus aurium." There was, he said, a noise "like the blowing-off of steam" constantly going on in his left ear. The least jarring of his body, even when walking, was most painful to him, and the roar of the London streets had become intolerable. I will not hazard any opinion as to the pathology of this disease; but it will, perhaps, suffice to say that a careful examination of the ear revealed to us nothing physically wrong with it, and that the clearing of the ears of wax, and the employment of nervine tonics and the nervine sedatives, had proved of no use. We then thought of giving galvanism a trial, and putting one rheophore in the patient's hand, we applied the other to the meatus of the affected ear. He was immediately relieved, and at his next visit, a week later, he stated that he had been free from the noise for five days, and it then returned again, but not so severely. We repeated the application, and the result has been that he has almost entirely lost his trouble.

Electricity is no panacea, and often fails entirely to relieve pains; although I believe that, on the whole, the cases in which it is effectual would outnumber those in which it fails. Unfortunately, I am unable to give you any rules which should lead you to expect either failure or success in any particular case. As our knowledge increases our powers of prognosis will doubtless increase also.—*Lancet*, *Aug.* 29, 1874, *p.* 300.

13.—ON THE COMMON FORMS OF PARALYSIS FROM BRAIN DISEASE.

By Dr. H. CHARLTON BASTIAN, Physician to University College Hospital; and Senior Assistant-Physician to the National Hospital for the Paralysed and Epileptic.

In cases of this kind a person may be sitting at meals, walking, reading, or otherwise engaged, when—perhaps after a momentary giddiness, though without other sensation—he suddenly loses power over one side of the body. If standing, he drops down, owing to a giving way of the leg, and at the same time finds himself unable to move the corresponding upper extremity. When aware of the powerless state of his limbs, the patient may experience no pain, or other sensation than a feeling of numbness in this half of the body or in the limbs themselves. He is quite conscious, and may be able to speak more or less intelligibly, though at other times he is only able to communicate with his friends by means of signs. Now such a mode of onset is very frequent indeed, especially in the slighter cases of hemiplegia. Again, not unfrequently we are told by a patient that on awaking one morning he felt a sense of numbness on one side of his body, and was thus led to the discovery that the limbs of this side were paralysed. The injury to the brain takes place without producing any sensation sufficient to awake the patient, and this may occur even in cases where pain has been a marked symptom amongst the prodromata. Thus a woman aged forty-seven, who was under my care at the Hospital for the Paralysed and Epileptic, was seized rather suddenly with vertigo and pains in the back of the head. After half an hour she became sick, and the sickness frequently recurred, together with excruciating pains in the back of the head, for two days. On awaking the next morning she found herself quite paralysed on the left side of the body and unable to speak.

Sometimes the onset of the hemiplegic symptoms is not absolutely sudden—the paralysis advances and spreads more slowly. In these cases the attack usually begins with a weakness in the hand or arm, though more rarely the loss of power is felt first in the leg. At other times the hemiplegia is ushered in by loss of speech and drawing of the face to one side. As examples of these latter modes of origin, I may cite the following brief details. One of my patients, a man sixty-four years of age, whilst walking, felt a tingling in the ends of his fingers, followed by weakness in the left arm, which increased, and afterwards extended to his leg and face: at the expiration of half an hour he was quite hemiplegic. Another patient, sixty-eight years of age, on getting out of bed felt uncomfortable, and went to bed again, when he was seized with a feeling of numbness in the left side, which was followed in about half an hour by complete paralysis of the corresponding arm and leg. Another patient, a woman aged fifty-two, whilst taking breakfast felt giddy and found herself weak in the right leg; and she gradually lost power in both leg and arm during the next twenty-four hours. The paralysis of these parts had then become complete, and, though there was no loss of speech, a thickness of articulation continued for some time. Again, a man, sixty-one years of age, awoke one night and found himself unable to speak. He felt no pain nor any unusual sensations, and in half an hour he regained his power of speaking. He went to his work the next day, but on awaking the following morning he found he had quite lost the use of his right arm and leg.

It happens, moreover, in certain rare cases, that a sensation of pain, either in the head or in one of the limbs about to be paralysed, has occurred as the initial symptom. Thus one of my patients, a man forty years of age, suffering from left hemiplegia, gave the following account of its mode of onset. He had suffered occasionally from sharp darting pains in the right side of his head, and also in his left arm, for about a month, when suddenly (whilst walking along a road) he felt an acute pain through the right side of his head, and thought he "heard a noise." He would have fallen at the same time had he not caught hold of a support, owing to a sudden and complete loss of power in his left arm and leg. There was no loss of consciousness, but he spoke thickly for several hours. Another patient, a man sixty-seven years of age, after supper suddenly felt a stab-like pain in his right hand: he cried out, and fell down insensible, paralysed on his right side. I may state that in both these last-mentioned cases the sum-total of symptoms seemed strongly to indicate that the pons Varolii was the seat of lesion. In another patient who was under my care a hemiplegic attack was ushered in by a still more special sensation, also tending to reveal or localise the seat of lesion. He was a man sixty-two years of age, who suddenly lost the use of his right side, without loss of consciousness, and without any sensation except a "stupefying smell," which lasted for two or three minutes.

Now, although I have described the three modes of onset of hemiplegia—the apoplectic, the epileptiform, and the simple—as though they were quite distinct from one another, you may easily imagine that these varieties become occasionally more or less merged and present during the same attack. Loss of power without loss of consciousness may exist for a very short time, and then the patient may either suddenly or gradually lapse into a condition of complete coma, owing to a sudden or gradual increase of the original lesion. Again, an epileptiform attack may supervene shortly after the onset of a hemiplegia which commenced either with or without loss of consciousness. Many varieties, indeed, in the mode of onset and subsequent progress are to be met with, which will, I hope, be more easily understood after what I have already said.

We must now turn to a consideration of the hemiplegic state itself, and as a starting point I shall take one of the most ordinary forms of hemiplegia. I shall describe the grouping of the symptoms occasioned by a lesion in and just outside the right corpus striatum, in order that this may serve as a type of the condition generally.

If a loss of consciousness has been occasioned by the shock to brain-function produced by the first onset of the disease, we must suppose our patient to have recovered from this condition after a few minutes or a few hours. Such temporary loss of consciousness need not necessarily exist, and in many instances is absent altogether. By careful examination we shall then be able to find that our patient presents the following peculiarities: (1) an absence of any decided mental disturbance; (2) slight thickness of speech; (3) more or less deviation of the tip of the tongue to the paralysed side when it is protruded; (4) partial and incomplete paralysis of the facial muscles on the side on which the paralysis of the limbs exists; (5) more or less complete loss of voluntary power over the left arm and leg; (6) a flaccid state of the muscles of these limbs, which respond naturally, or perhaps even a little too readily, both to the faradaic and voltaic currents; (7) some actual loss of sensibility as well as a feeling of "numbness" on the paralysed half of the body; (8) slight elevation of temperature on the paralysed as compared with the non-paralysed side of the body, the difference being seldom more than one degree of the Fahrenheit scale.

Now the progress of such a patient in respect of these symptoms, where the lesion does not increase and the patient progresses favourably, is apt to be as follows:—

The *mental condition* continues undisturbed, or at most there is slight weakening of the general mental power of the individual, which may be accompanied by an increased readiness to the display of emotional manifestations—more especially to crying on slight occasions. This slight weakness may, however, entirely wear off after a time.

The *speech*, after a few days, or at most a week or two, loses its previous thickness. The slight difficulty in the articulation or utterance of words gradually passes off.

The *tongue* also soon again begins to be protruded with its tip pointing straight forwards, owing to the recovery of power in the genio-hyoglossus muscles on the paralysed side. Mistakes are apt to be made in reference to this point by a superficial observer, who does not allow for any marked deviation which may still exist about the mouth.

In a day or two, also, though perhaps not for a week or two, the *sensibility* of the paralysed limbs again returns to its normal condition. The subjective feeling of "numbness," however, may persist for a longer period.

The *temperature* of the paralysed limbs soon sinks to the level of that of the opposite side, and after a time it is apt to become even a trifle lower. The paralysed limbs then are, and feel to the patient, colder than those of the opposite side.

The *paralysis of the face* begins to disappear sometimes after a few days, though more frequently after a few weeks. It may persist to some extent, however, for many months. Now, it is important that you should understand the kind of facial paralysis which is met with in these cases. It is, as I told you, both partial and incomplete—that is, it only affects, to an appreciable extent, some of the muscles supplied by the portio dura of the seventh nerve; and those which are affected are weakened rather than wholly paralysed. Those chiefly affected are the buccinator and other straight muscles going to the angle of the mouth and lip on the paralysed side of the body; in consequence of which the cheek on this side looks flat, the upper lip is less arched, and the angle of the mouth on the same side is decidedly lower than its fellow. As patients and their friends often say the face is "drawn," though they refer especially to the opposite or non-paralysed side, where, owing to the unresisted action of the muscles on this side, the angle of the mouth is higher, especially when the patient laughs or speaks. Or you may judge of the extent of the paralysis when, in answer to your request, the patient attempts to show his upper teeth. You may note that he can frown as usual, can lift his eyebrow and eyelid, and can close his eye on the paralysed side almost as well as on the other side of the face. It is only rarely that a trifling weakness of the orbicularis palpebrarum is apparent after the first day or two of the attack. And in judging of the existence or amount of facial deviation in any doubtful case you must not lose sight of the fact that an unsymmetrical condition of the mouth exists not unfrequently without any hemiplegic condition. This may be due to a comparative absence of teeth on one side, or it may have been a mere peculiarity long existing in the individual under observation. These may seem trifling matters, gentlemen, but they are oftentimes of great importance. You will hereafter have to form your opinion as to the state of patients who, in addition to slight symptoms of impending brain disease, seem actually to present some amount of paralysis on one side of the face. For such paralysis may exist alone for a time, as the first instalment or harbinger of a complete hemiplegia. You will see the importance, therefore, of recognising the kind and amount of facial paralysis which goes with hemiplegia, in order that you may be able at once to distinguish it from the mere local paralysis of the facial nerve due to comparatively external causes.

The last sign of the hemiplegic condition to disappear is the *motor paralysis of the limbs*. Recovery in this respect commences after a very variable period—weeks or months; and whilst in some few cases it may go on to a complete restoration of power, in by far the larger number recovery is almost arrested after the patient's condition has more or less improved. Now it is important to note that there is a certain order observed in the succession in which power is restored to the paralysed parts. The parts which are paralysed least are the first to show signs of improvement, and the parts which are paralysed most are the last to recover. But in all cases of hemiplegia in which the paralysis is not absolute, it is found that the arm suffers more than the leg; whilst of the several parts of each limb, the muscles about the proximal joints are least paralysed, while those for the movement of the distal joints are most powerless. So that, in accordance with what I have already told you, improvement as a rule begins to manifest itself by an increased ability to move the hip-joint, and is followed gradually by a recovery of power for the production of the more distant joint movements in the lower extremity, though at some variable stage of this recovery improvement also begins to manifest itself in the upper extremity—first as regards the movements about the shoulder-joint, and subsequently (if improvement should go so far) in those of the elbow, wrist, and fingers. The parts which are habitually employed in the most complex and purely voluntary movements are therefore the last to be restored to their normal condition.

In ordinary cases, such as we are now considering, the muscles remain throughout in a flaccid condition, and they undergo no special wasting—that is, no wasting beyond what may be accounted for by long-continued disuse or functional inactivity, conditions which cause them to assume a more soft and flabby feel than the corresponding muscles on the opposite side of the body. Again, the electric irritability of the muscles in cases of hemiplegia was long ago studied by Dr. Reynolds; and he showed that whilst during the first few days of the disease, or longer in some cases, the electric irritability, both for faradaic and voltaic currents, might be slightly increased, as a rule it was normal in the paralysed muscles of a hemiplegic patient. This fact many of you have now had frequent opportunities of verifying for yourselves, and it is one which often proves of much use to us in our endeavours to ascertain the cause of any given paralysis where its distribution is at all anomalous.—*Lancet, June* 27, 1874, *p.* 899.

14.—ON THE TREATMENT OF PARALYSIS BY ELECTRICITY.

By Dr. G. VIVIAN POORE, Assistant-Physician to Charing-Cross Hospital.

In treating paralyses the following rules may be of service—rules which are in part culled from Dr. Reynolds's invaluable treatise "On the Clinical Uses of Electricity."

1. *If the paralysis to the will remain absolute, and if the contractility of the muscles be perfect, we do no good by persevering with electrical treatment.* This condition is often met with in hemiplegia. The patient is absolutely helpless on one side, although the muscles are in no degree wasted, and their irritability remains normal.

2. *If the paralysis to the will remain absolute, and if the irritability of the muscles be diminished, then electricity is useful, in so far as it helps to improve the nutrition of the muscles, and restore their normal degree of irritability.* The normal degree of irritability being restored (the paralysis to the will remaining absolute), then electrical treatment may be discontinued. The irritability of muscles may be diminished from mere want of use, and electricity may serve to restore this irritability.

3. We should bear in mind the advice of Sir Thomas Watson, that "our aim should be to preserve the muscular part of the locomotive apparatus in a state of health and readiness, until peradventure that portion of the brain from which volition proceeds having recovered its function, or the road by which its messages travel having been repaired, the influence of the will shall again reach and reanimate the palsied limbs."

4. Whenever we meet with the *degenerative reactions* we should employ that form of current to which the muscles most readily respond, which is invariably the galvanic. We must persevere doggedly, and we may find our perseverance rewarded by the gradual return of the normal muscular irritability.

5. If the irritability to both forms of current has completely disappeared, we are not justified in persevering too long, nor in holding out delusive hopes to the patient. Nevertheless treatment should not be abandoned without a patient trial.

In treating paralysis with electricity, an exact diagnosis is, above all things, necessary, and we should be able to bring our knowledge to decide as to whether or not the paralysing lesion is of a permanent nature, or one that, according to our pathological knowledge, is or is not removable, or susceptible of improvement. If not, then our efforts to cure must of necessity be unavailing. It is in those cases where the paralysing lesion has disappeared, or has improved, and we have only to combat with the effects produced by it, that our efforts are the most successful.

Hysterical paralysis is especially susceptible to electrical treatment, and with it we occasionally work apparent miracles. When a patient who has no will to move her muscles sees that her muscles can be made to move in spite of her will, it is no wonder that such a discovery should exercise a wholesome moral influence over her mental condition.—*Lancet*, *July* 4, 1874, *p.* 4.

15.—CASES OF EPILEPSY AND HYSTERIA TREATED WITH FREE PHOSPHORUS.

By J. Ashburton Thompson, Esq., Surgeon-Accoucheur to the Royal Maternity Charity, London.

At the same time that the use of free phosphorus in medicine is beginning to make some way in England, and is now acknowledged to offer a *methodus medendi* capable of affording the most surprising good results, it must be confessed that the particular diseases in which the treatment may probably prove serviceable are very ill defined. It is, therefore, as a contribution to the mass of facts which it is necessary to accumulate before venturing to enumerate specific indications for its employment, that I bring forward this group of four cases. The first is a case of infantile epilepsy, which has, as will be seen, some remarkable points about it.

Case 1.—A. B.; female; aged four years; father and mother healthy. I have attended three brothers of from one to three years of age, in fatal attacks of meningitis. In one case this was ascertained by post-mortem examination to be tubercular. The patient is a stout, red-faced, coarse-haired child, of the appearance which Londoners generally consider that of a "country child." To the educated eye she shows at once many evidences of peculiarities of nerve constitution. She talk fairly well. Was born with one tooth. Is considered to be a sharp child. In November, 1872, she had two long and severe epileptiform convulsions; in the second she presented the usual appearances. I could not detect any other evidence of disease; there had been no premonitory symptom; and she was very soon quite well again. On March 29th, 1873, she had one similar fit, which lasted fifteen minutes. As before, no warning was observed, and when the attack had passed over she seemed quite well. Twenty-five days after this she was observed to become very irritable; crying at the least provocation; picking quarrels with her brothers and sisters; sometimes sitting for ten minutes at a time, if undisturbed, staring at nothing, quite lost to what was going on around her, and flushing or turning pale at frequent intervals. On the twenty-sixth day, April 24th, she had another fit, lasting fifteen minutes. This time a little peevishness was observed to remain for a day or two afterwards. From that time to the present date, on every twenty-eighth day precisely, a return of these symptoms has been observed, with the variations hereinafter described. On May 22nd, the same sequence of events last detailed was observed. On June 17th, two days before the next fit was expected, she was brought for treatment. The premonitory flushings and absence of mind were well marked. She was, however, at the time of inspection, apparently in good health. There were no objective symptoms noticeable; but these generally disappeared under the excitement of seeing a stranger or any other small occasion. To take one thirty-sixth of a grain of phosphorus in the alcohol and glycerine mixture, every four hours. She should have had a fit on the 19th inst., but there was none; and indeed by that time she was quite well again. At the next period, July 17th, the treatment having been regularly persisted in in the mean time, there was again no fit; and the usual symptoms of nerve-disturbance lasted only two days, instead of five or six. On August 14th, September 11th, and October 9th, similar very slight symptoms were observed; the treatment had been intermitted on the 25th of July. On October 1st, she fell ill with measles, and experienced a very severe but uncomplicated attack which left her very weak. The November period came round before she had recovered strength; and on the 6th of that month, without so much warning as usual, she became insensible, and was convulsed in a more violent manner than on any previous occasion. The insensibility persisted until the 11th inst., when she began to recover a little. During this time she continued in a state of clonic convulsion. The insensibility was complete. The temperature two degrees above the standard. The pulse ranged between 140 and 180, but it was at no time observed to be intermittent; and the pupils about the third day of the attack failed to answer to the stimulus of light. There were symptoms then of meningitis and of compression of the brain, and death was very confidently predicted. However, on the 12th she showed some signs of returning sensibility, and on the 13th she was quite recovered in that respect. Another week saw her as well as usual with the exception of a pain in the nape of the neck, which always attends the monthly manifestations. From that time to the present the usual symptoms of disturbance have recurred every twenty-eighth day, but in a degree distinctly greater than during and immediately after the time she was under treatment with phosphorus. She has not since been again placed under the influence of that drug.

In this case the remarkably regular return of the symptoms on every twenty-eighth day first attracts attention. The attack of March 29th may be regarded as the commencement of the series, although the next attack occurred on Thursday, April 24th—*i.e.*, two days short of twenty-eight. But this is the only exception to a manifestation of some neurosal disturbance on every fourth Thursday up to the present time. Since she had already had three consecutive monthly convulsions when placed under treatment, it is fair to attribute the intermission which then took place to the treatment commenced just before the fourth period. Notwithstanding the occurrence of the severe attack noted on Nov. 6th, on precisely the right day, whence it might be argued that it was of the usual epileptic kind, there was no doubt that it was in fact an attack of meningitis. Acting on this view, her treatment consisted in the hourly administration of tincture of aconite and bromide of potassium in doses of half a minim and one grain respectively. The excellent result which this method affords in hydrocephalus, and which Dr. Brunton has published in the Glasgow Medical Journal, led to its adoption in this case.

Closely allied to epilepsy is that other neurosal condition recognised as hysteria. The following observations made on patients in whom neuralgia and hysteria were concomitantly present show such an improvement in the latter disease, while under treatment with phosphorus for the former, as appears to me to warrant a further inquiry into the power of this drug as a remedy for it.

Without venturing to attempt any definition of hysteria, it may be described as consisting in its first stage of a generally inefficient performance of the vital functions attended by general impairment of the nervous system; and very often a course of treatment not specially directed to the latter is sufficient to remedy both conditions. But at a later period, in confirmed cases, the nerve symptoms are often seen to persist in the most marked manner after it has become impossible to detect other evidence of impaired function. Under these circumstances, no indication exists which warrants the anticipation of success in treatment more from one drug than another. It is in these cases that moral influence is found pre-eminently useful; and probably cases are within the experience of every practitioner, in which recovery has been effected by this means alone, and sometimes instantaneously. The following instance illustrates the condition and the treatment referred to.

Case 2.—Some years ago I was requested to undertake the treatment of a young lady who was reported to have been bed-ridden and subject to fits for eighteen months. She had been under the care of various practitioners. On examination the patient was found to be a girl of eighteen years of age, well developed and stout, of good spirits and a cheerful manner; she was said to be of an equable temperament. Menstruation had commenced two years previously, and the periods had always returned with regularity; she had grown considerably since her confinement to bed; she ate and slept well; and all the other functions of the body appeared to be performed in a perfectly normal manner. But every afternoon at four o'clock precisely she had a fit, in which she appeared to be quite insensible; the body stretched out and stiffened. There was no clonic convulsion, she did not change colour, and the pulse and respiration remained unaltered, so that at first sight the case appeared to be a pretty clear one of malingering. But there was always present at these times a very great degree of anesthesia which appeared to affect the whole surface equally. The severe pain caused by pinching the skin violently between a pair of little hair tweezers called forth a languid acknowledgment of discomfort; but no amount of pricking with pins or pinching with the fingers or tickling elicited any sign of sensation at all. In ten minutes the fit would pass off entirely, and the patient would sit up and take her tea without at all interfering with her appetite for dinner two or three hours later. In addition the fingers and toes were always immovably flexed and had not been known to suffer extension during a year past; and she affirmed that she could not stand on her legs. All kinds of treatment having been tried, and there being no special indications present, I determined to trust entirely to moral influence. But as a show of taking remedial measures materially lightens the heavy tax on the mental powers which this kind of treatment involves, I announced that her cure would be effected by galvanism. A trifling current from an ordinary rotatory machine was therefore passed down the spine for a few minutes on each of three days; and having by that time obtained the confidence of the patient, I informed her that she would have no more fits; and accordingly there were none. The galvanic machine was now thrown aside and she was persuaded that she could stand upright, and on the second trial a push in the back obliging her to take a step or two to the nearest article of furniture for support, showed her that she *could* walk. She was now soon persuaded that she could shuffle about the room with the assistance of a chair; but for more than a week she could not be brought to dispense with it, and it became necessary to take other measures. Not to prolong this illustration unnecessarily, it may be briefly stated that, declining to call in the aid of medicine, I resorted to the stick. The patient was set up in the middle of the floor conveniently contiguous to the chairs and tables, and started to walk with a push; and she was informed that whenever she sought assistance from the furniture, the hand stretched out would become acquainted with the stick. Of course there were tears and entreaties; but it was surprising to see her rapid progress when a few bruises made it understood that there was every intention of pursuing this line of treatment seriously; and by the time the hands were sore from repeated blows the patient could walk out in the garden like other people. In short, on the twenty-second day of treatment she walked through the streets to my house without assistance and full of thanks. It would seem in such a case as this that a habit of mind, to which general but actual disease had contributed in the first place, may be continued long after that disease has passed away, and that when all medicinal treatment has failed, it is still possible to effect cure by measures which can be supposed to act but in one manner—viz., by stimulating the nervous system and by thus rendering the mind capable of active and original exertion—capable of diverting itself from the introspective groove in which it has been confirmed by habit.

But it is not to be forgotten that to cause hysteria, as is the case in other diseases, the comparatively trivial causes in which it originates must occur in a subject predisposed to that disorder ; and this fact points to some peculiarity in the nerve condition of such persons. The circumstances indicative of this predisposition appear to be an unduly irritable state of the nervous system, a want of just appreciation of the relations which should exist between externals and internals ; a want, in a word, of self-control, which may at any moment appear as a true hysteric paroxysm, and which, if allowed to persist, terminates in a veritable paralysis of the will. But this condition is very frequently preceded and accompanied by symptoms which point to still more definite nerve derangements ; by local or general anæsthesia or hyperæsthesia, by pains varying in situation and intensity, and which are perhaps never entirely imaginary, by sick headaches and neuralgia. The hysteric state would seem then to be one of *depression of nerve power ;* and when this state of depression, which is an actual disease, has passed off, some of the symptoms to which it gave rise may be perpetuated by habit. In the latter case a moral stimulus may be found sufficient to recover the patient ; but in the former—in the acuter stage of depression—this treatment alone is not permanently successful. Nor are there any known drugs which can be relied on to cure it, unless the one of which I am treating should prove to be an exception. Phosphorus may have other active properties, but it is nothing if not a stimulant, and it seems to exert that kind of power primarily over the nervous system. The association of hysteria with other neurosal symptoms, such as those last named, has come under my notice lately rather more frequently than usual ; and these patients (who were being treated with phosphorus for neuralgia, and the various obscure pains which they generally complain of, and which I have been in the habit of regarding as neuralgic) have therefore been closely watched. I relate two of a series of six or seven cases in which a remarkable improvement in the general health has attended the same treatment employed with success to remove the special symptoms.

Case 2.—C. D. is a fairly well-developed girl of sixteen years of age. The menses appeared first about a year and a half ago, and the function has since been performed with regularity. She is somewhat pallid ; and while she is at all times very excitable, for the last two or three months she has had a violent hysteric paroxysm once or twice a week. Her general health being pretty good, it was considered that these symptoms were due to debility consequent upon rapid growth, and advice was not sought until an attack of neuralgia supervened. It did not appear from the general information received that the pain was very severe, although the patient made a great deal of it ; and it had lasted at the time of treatment about ten days with only slight and imperfect intermissions. It affected the temporal and supra-orbital nerve branches on the left side of the head. One-twelfth of a grain of phosphorus in alcohol and glycerine was prescribed to be taken three times daily. At the third or fourth day the neuralgia disappeared and did not return ; but in addition a striking change became manifest in her general condition. She had an attack of hysterics of the usual description on the second day of treatment : but from that time these fits ceased to occur. Her spirits began to be more equable, and her emotions more under control ; she was neither depressed at times nor boisterously merry at others ; she could laugh in moderation. The treatment, on these signs being manifested, was continued for a fortnight ; and ten weeks afterwards her mother stated that there had been no return of the old symptoms. Three months after this, or about six months from the commencement of treatment, she again complained of the hysteric feelings ; the same remedy as before was given and the result was as satisfactory.

Case 3.—E. F. is a well-grown fresh-coloured girl of twenty, but it is obvious at a glance that she is hysterical. She had that fulness of the upper eyelid, and that entreating look about the eye which serve to diagnose hysteria without any further inquiry. Five months since her mother entered upon her fatal illness; it lasted for two months, and during that time the patient had a great deal of very arduous duty to perform, often passing two consecutive nights without putting off her clothes. Before she was released from this occupation she began to suffer from migraine. The pain always occupied the left temporal region exclusively, and would come on suddenly. For a few minutes previous vision would be disturbed, surrounding objects became indistinct, and while large things appeared to have green spots on them, print appeared to be surrounded with red lines; in a short time these sensations were followed by sickness, and the whole attack usually lasted some hours, only passing off after a little sleep. These attacks, which had persisted for three months at the time of treatment, returned with tolerable regularity every other day; and, in addition, during the latter eight or ten weeks she had had a hysteric paroxysm at least once a week. She became listless and dull, being able to talk of little but her own health; and, having to take the position of mother to her younger brothers and sisters, as far as might be, felt herself incapable of performing the duties entailed upon her. In addition to the above-named symptoms the menses returned every eighth day, and she suffered very much from flatulent dyspepsia, with irregularity of the bowels. A diet of lentil meal, with milk and eggs, and abstinence from meat, with an alkaline mixture containing infusion of gentian and bismuth, soon corrected the last-named symptom; but the other trouble continued. She was therefore directed to take one-third of a grain of zinc-phosphide in the form of a pill and coated (Cox) every four hours.

Fifth Day.—A bad headache.

Thirteenth Day.—Has had no headache until this morning, when, having sat up very late last night, she had what she calls "half a headache."

Fifteenth Day.—Was much upset yesterday by some domestic affair, and has quite a bad headache to-day. Menstruation.

Seventeenth Day.—Half a headache.

Twenty-fourth Day.—A bad headache. Menstruation.

Twenty-fifth Day.—With the exception of the seven days between the fifth and thirteenth days, she can scarcely be said to show much improvement in respect of the migraine, and she is very little better as regards the hysteria. The treatment with zinc-phosphide was therefore exchanged for three doses daily of one-twelfth of a grain of phosphorus dissolved in cod-liver oil.

Thirtieth Day.—There having been no headache, she was directed to intermit the medicine.

Thirty-first Day.—Slight pain occurring, the mixture was resumed, and continued for another ten days. There was no headache during this period, nor has any been experienced since—now two months. In addition, all the hysteric symptoms have disappeared, and she says that she is so well that she scarcely knows herself. It should be observed that as the headache failed to yield to the zinc-phosphide so the hysteric symptoms persisted unabated during its use; no sooner, however, was phosphorus exhibited in another form than her appearance at once altered. Her manner became cheerful; she no longer occupied the day searching out a new symptom to inform me of on the morrow: she began to interest herself again in her domestic duties, and she very shortly lost the peculiar physiognomy which I have alluded to above. In a word, in this case as in the previous, in curing the special nerve pain, the general nerve condition was removed. In the last case it is not easy to estimate the importance of this happy result, for the patient came of a family in which consumption and insanity had occurred in many instances. The mother died of the former disease; the father maniacal.

I repeat, then, that having regard to the property of nerve stimulation which phosphorus possesses, it is reasonable to anticipate that it may prove serviceable in cases of hysteria, which are indeed cases of nerve depression; and I believe that the cases which I have thus far had the opportunity of observing, and of which the two foregoing are examples, warrant this anticipation. To find a drug absolutely remedial of hysteria is to prove in one way that that is a distinct disease; and since it is one in which, while it is widespread, and in many cases as serious as insanity itself, no medicine hitherto known can be relied on to exhibit remedial powers, the importance of such a discovery can scarcely be overrated, and if asserted with reason demands strict and instant inquiry into its value.—*Obstetrical Journal, June* 1874, *p.* 137.

16.—ON SOME NEW PREPARATIONS OF PHOSPHORUS, WITH GENERAL REMARKS ON THEIR VALUE AS THERAPEUTICAL AGENTS.

By Dr. C. H. F. Routh, Fellow of University College, London.

Some two years ago I had the pleasure of reading before the Medical Society of London a paper "On Overwork and Premature Mental Decay" (published by Baillière, Tindall, & Cox, London, 1873, pp. 32). The purport of that paper was to show that in many of these cases there was a chemical deficiency of nervous element, and that this last was imperfectly nourished, not receiving for assimilation the amount of phosphorus it required. This I proved pathologically by cases, and so far the paper was very well received, and gave an impetus to the use of phosphorus compounds in medicine. The British Pharmacopœia, by an Appendix just published, has recognised its therapeutical value for the first time.

My difficulty was to procure a safe phosphorus compound; but I think now, with the assistance of my friend Mr. King, of Crawford Street, who is also a most intelligent practical chemist, we have succeeded in obtaining several, some of which I feel pretty sure will prove of unexceptional value as therapeutical agents.

In describing these *seriatim*, I shall specially refer to the action of the first of these, the sol. phosphori medicati, as exemplifying more clearly the action of phosphorus, and allude to the differences observed in their operation under the headings of the several preparations.

1. The first phosphorus compound which I tried was one which I called the *sol. phosphori medicati.* It is prepared according to the formula of Dr. Hammond, of New York. I have already described it elsewhere. Twelve grains of phosphorus are boiled in ℥ i. of almond oil, and filtered, half of this is mixed with 1¼ oz. of gum arabic, adding 15 drops of wine aromatic. The dose is 15 drops, containing 1-24th of a grain of phosphorus, given three times a day with meals. As I have before remarked, this is not a preparation which everybody can take. It sometimes operates very energetically as a poison, producing even in doses of ten drops intense sickness, temporary loss of power in the extremities, and a deadly pallor—in fact, it cannot be tolerated in these doses by some persons. It is more prudent to begin with five drops, gradually increasing the dose one drop daily, and in this way it can be brought up often to thirty or forty minims for a dose. I have found that in weak persons it is readily taken in five-drop doses with cod-liver oil, and in this manner readily assimilated. As much of the salutary effects of cod-liver oil is due to the phosphorus contained, it is probable this combination will in many cases add to its value. The effect of long-continued employment of this remedy is somewhat remarkable. It seems occasionally to produce an intense burning along the intestinal tract. Patients describe it as a coal of fire within them. This will, however, very soon disappear when the remedy is stopped; nor have I noticed any bad results to follow this symptom, which I look upon as evidence that the drug has produced its full effect, just as salivation may be said to denote that the mercury has produced its full effect. Short of this it produces in persons who are habitually chilly and weak an agreeable sensation of general warmth in the body, the comfort of which has been so enjoyable to some patients that they do not like to leave it off. Its effect on brain power and sexual impetus is, as I before observed, very satisfactory. I have seen in very many instances a man become very restless, nervous, irritable, wakeful, and with much loss of memory, gradually made quiet, more sleepy, and recover his powers of recollection. Here also I have noticed that several of my patients who, having be-

come weakened from any cause, and who had once tried the remedy, have voluntarily gone back to it; the usual remark made, "I am always right when I take the phosphorus," evidencing at least their faith in its virtues. It is not always prudent to give it in some varieties of spermatorrhœa. A larger experience of the drug has afforded me examples of cases of this disease in which it increased the spermatic flow, though not with the same tendency to cerebral pain and confusion which a night's loss in many of these examples produces. It becomes necessary therefore to combine its employment with the use of local astringent injections of tannin, zinc, or iron within the urethra. This effect, however, is seldom observed until the remedy has been employed for some time. Its first effect is always beneficial, and there is generally a marked relief to the nervous symptoms usually observed in spermatorrhœa.

Its effect upon some varieties of cutaneous eruption, eczema, acne especially, is very remarkable from its rapidity.

The same remarks apply to cases of neuralgia, especially of a chronic character, and in connection with uterine disease.

I may lastly remark that I believe the phosphorus compounds exert a beneficial effect in some cases of cancer. I speak here, however, more diffidently, for I require larger experience; but the pain has appeared to me to diminish, and the progress of the disease has been apparently retarded. I speak here entirely of phosphorus when administered by the mouth; of its effect locally in cancerous sores I am not in a position to speak yet as I would.

There can be no doubt, however, that this preparation acts uncertainly, and should be watched during the progress of its exhibition. After a time drowsiness is produced, and occasionally great dryness of the mouth, so as to lead to the suspicion that belladonna has been given. This last symptom is not of invariable recurrence, but when it does present itself it is very distressing. There is no doubt, again, that it clogs up the liver. Patients are apt to become very bilious, indeed, quite jaundiced, and in these cases the conjunctiva seems to be the first part affected even before the skin. A simple suspension of the drug for two or three days will cause all these symptoms to pass away, and then it may be again resumed with advantage; occasionally, of course, a brisk calomel purge is necessary.

Headache is occasionally a symptom observed, and if it persists after the second or third day, we may conclude the remedy will not be borne except after violent purging, or in very minute doses, if at all.

I have usually considered 1-30th of a grain of phosphorus quite a large dose enough to begin with, *i.e.*, about ten drops of this solution. But we should be prepared for sudden occurrence of the poisonous symptoms, sickness, vomiting, faintness, palpitation, and temporary loss of motor power. This solutio phosphori medicati is of all the preparations I have used that by which these poisonous symptoms may be most readily induced. I have been informed this is due to a chemical decomposition of the *vegetable* oil, which does not apply to *animal* oils. I therefore now recommend the use of sperm-oil, or neat's-foot oil, in lieu of the sweet almond oil.

2. The second is *phosphide of zinc*, also recommended by Dr. Hammond of New York. This salt is a black, hard powder, and tasteless; it is the only preparation of phosphorus which I have ventured to use in a solid state. It may be conveniently mixed with extracts.

It has been doubted, however, whether this compound is in reality what it professes to be, and not an insoluble compound which cannot be appropriated by the economy; I may remark that it is so, first, because the chemical experiments made with it have been insufficient that this even could be doubted, and secondly, because the objectors have never tried the remedy therapeutically. If rubbed in a mortar it emits a distinct phosphorus (garlic) odour, and burns vividly in a flame, just as phosphorus itself would. Therapeutically it acts powerfully as a phosphorus compound, but not so powerfully certainly as the sol. phosph. med. I have generally begun with half a grain after meals three times daily, gradually increased to one grain, and even more. Apart from the good which it does in those cases for which phosphorus is useful, I have found it cannot be long borne in some cases of spermatorrhœa, as also increasing the quantity of the unnatural flow.

I have before alluded to the efficacy of arsenic in cases precisely analogous to those in which phosphorus is found useful. Exclusive of those cases, however, in which an ague element appears to enter, and in which arsenic is so effective a remedy, I have shown elsewhere, and have been here backed by the experience of others, that phosphorus sometimes succeeds where arsenic has failed.

3. It occurred to me, from seeing the beneficial effects of arsenic in many neurotic diseases, that it might be useful to obtain a compound of phosphorus and that metal. From the experiments made by Mr. King in this direction he concluded that the result was not to be obtained, the phosphide of arsenic proving quite insoluble.

However, after a very careful consideration it was decided to try the effect of bringing phosphorus and arsenic together in a finely-divided state in the presence of hydrochloric acid. This was found to be a difficult (indeed, a hazardous) operation, requiring great caution in manipulation. The resulting compound, however, proved very satisfactory. It has been called the *chloro-phosphide of arsenic*. It is free from offensive odour, capable of being largely diluted with pure water, and has then rather a pleasant taste. In its present solution it contains 1 grain of arsenic and 1·6 grain of phosphorus in the fluid ounce. The phosphorus and arsenic are so lightly held together that mere evaporation on hot coal is sufficient to disengage the former.

How, in the process of the formation of the chloro-phosphide, the hydrochloric acid acts is not clear; but in the same manner as the citrate of iron—an insoluble body—becomes the soluble ferri ammon. citratis on the addition of ammonia, so the insoluble phosphide of arsenic becomes soluble on the addition of hydrochloric acid, as the chloro-phosphide of arsenic. The presence of iron in the arsenic, or lime in the phosphorus, is objectionable. The regulation of the temperature is also an important point in dealing with such a body as phosphorus. Disregard to this circumstance has led to batches of the preparation being spoiled, and to some danger; but it has not yet been determined at which temperature the compound is best prepared.

As might have been expected from its composition, the chloro-phosphide is very effective in cases of neuralgia and marked ague cases. It also seems to act more as a general tonic than the other preparations, increasing the appetite; and of the several preparations of phosphorus I have tried, it is the one which is the least likely to produce liver derangement. I have frequently noticed that patients who take the chloro-phosphide do not like to leave it off; indeed, I fear, however I may dislike to say it, that this craving for phosphorus compounds, once they have been taken and found beneficial, may become a habit, in this respect resembling tobacco-smoking, or perhaps dram-drinking. The dose of the chloro-phosphide is from 15 to 20 minims three times a day after meals.

4. The *syrup of phosphorus* contains 1-60th of a grain in each fluid drachm, so that the dose should be about a teaspoonful. The only active ingredient in this syrup is phosphorus. It should be kept in a cool, dark room, and in small bottles for use. This compound resembles much a syrup which has been largely advertised. A weaker syrup than that prescribed in the Ph. Br. might be advantageous. The phosphorus, pure and finely divided, should be added with caution, and not beyond a certain limit.

This syrup is an exceedingly agreeably-tasted compound. This circumstance, in these tasty days, will make it very popular. In practice, however, it appears to act more powerfully as a phosphorus compound, and I have therefore, in the first place, limited the dose to begin with to half a teaspoonful, gradually increased.

It may be as well to remark, at a period when phosphorus is likely to be largely given, that turpentine, preceded by emetics, is the antidote. Dr. Lichtenstein has more lately called attention to this agent. The turpentine has been given in 12-drop doses in barley-water or milk. So far Lichtenstein's experience confirms that of Personne, Andaus, and Köhler. At the same time, it is right to remark that Dr. Schultzen, who had observed several cases of poisoning by phosphorus (30 or 40), states half have been got well, although no turpentine was given, and he attributes the recovery entirely to the vomiting induced.—*Medical Press and Circular, June* 3, 1874, *p.* 463.

17.—TUBERCULAR MENINGITIS IN CHILDREN.

By Dr. EUSTACE SMITH, Physician to H.M. the King of the Belgians, Physician to the East London Children's Hospital, &c.

The diagnosis of tubercular meningitis in the child is often very difficult in the early stage. The danger lies not so much in overlooking the disease when it is present as in suspecting its existence in cases where many of the symptoms are simulated by other affections. On account of the activity of the nervous system in young children, and the commotion into which it is thrown by the presence of acute illness, symptoms indicating functional disturbance of the brain may accompany many acute disorders. We should not therefore, because such symptoms are present, rashly assume that the disease must be a cerebral one, still less that it must be tubercular meningitis. M. Rilliet has given a wise caution against hurry in the diagnosis of this complaint. An opinion should be formed with deliberation, and be rested not upon one or two symptoms, but upon a broad view of the whole aspect of the case, otherwise we shall be very likely to fall into error.

There are numerous symptoms indicative of cerebral disturbance, which, although frequently present in cases of organic disease of the brain, are yet perfectly compatible with mere functional derangement: vertigo, headache, delirium, twitching and convulsive movements, irregularity of pulse, all belong to this class. One or all of these may be present in a case without necessarily denoting more than nervous irritability and distress which may be of purely functional origin. Tubercular meningitis is essentially an insidious disease, and there is a certain regular progression in the symptoms which should be always looked for. The condition of the child before the actual outbreak, then, becomes of especial importance, and a history of several weeks or months of languor and steady wasting greatly heightens the importance of the more definite symptoms of invasion. Vomiting, combined with constipation and an elevated temperature, coming on under such circumstances is always very suspicious. If afterwards the pulse becomes slow and irregular, and there is drowsiness, with occasional squinting or inequality of pupils, there can be little doubt remaining as to the nature of the complaint. In all such cases it is important to attend to the expression of the face. During the invasion stage the child looks really ill, and the features are pinched and drawn. In a case where tubercular meningitis is suspected, if this haggard expression be noted, however slight the other indications may be, we are justified in entertaining the most serious apprehensions.

A slow irregular pulse, especially if the intermission be complete, very greatly increases the value of the symptoms with which it may be associated. It must, however, be remembered that during convalescence from acute disease the pulse in a child often becomes slower and irregular, and may even completely intermit, especially during sleep. But in such cases the condition of the child is improving, while in the case of tubercular meningitis the slackening of the pulse is accompanied by increased mental heaviness, without any amelioration in the other symptoms.

In a typical case where all the symptoms of invasion are present, the diagnosis is not a difficult one, but very often some are absent. Thus, the disease may begin without vomiting, or this symptom may occur once and not be repeated. In other cases the usual constipation is absent, and the bowels may even be relaxed; but if there be headache and drowsiness with deep sighs, and if the pulse becomes slow and irregular, we have grounds for the very gravest suspicion. Irregular breathing is in such a case of the utmost importance, and, if markedly unequal, is perhaps more to be relied upon than any other *single* symptom in the diagnosis of tubercular meningitis during the early period. When in doubt at this period we should look for the slighter forms of nervous derangement, as these are more to be trusted than the severer, which occur, as a rule, later on in the disease, and are only occasionally present in the beginning. Thus, it is the exception for the disease to begin with a fit of convulsions or violent delirium, or other form of intense nervous excitement.

In ordinary cases the symptoms are much less startling in their character, and must be looked for in order to be observed. Thus the child may be noticed to contract his brows, wink his eyes, and avoid the light; his face wears a discontented or spiteful expression; the cheeks flush up and then grow pale, and the features are suddenly contracted at times with a strange grimace the child puts his hand to the crown of his head, complains of headache, and sighs frequently; he is sullen and morose, has a peculiar fixedness of look, and answers questions dryly or not at all. Symptoms such as these are very valuable, because they, or at any rate some of them, are almost invariably present during the stage of invasion.

The diagnosis of tubercular meningitis has often to be made by exclusion. In all cases of acute illness beginning with nervous symptoms and with vomiting, the meningeal disease may be suspected, and we can only wait for further information before venturing upon an opinion. In the case of the exanthemata the appearance of the specific eruption enlightens us upon the nature of the case. If the disease be pneumonia or pleurisy the characteristic signs of these complaints will be discovered on examination of the chest. Pneumonia, especially when it attacks the apex of the lung, is sometimes accompanied by nervous symptoms which bear a close resemblance to those of tubercular meningitis; a case of this kind has already been related (Medical Times and Gazette, 1873, vol. i., p. 437). Cases, however, constantly occur where the symptoms are anomalous, and where, however carefully the patient be examined, the most experienced physician must be at fault as to the nature of the disease. In such cases the medical attendant should proceed with caution, visiting the child frequently, and watching anxiously for any fresh and more definite signs which may point him to a conclusion.

There are two forms of disease in which mistakes are particularly likely to happen. Thus, exhaustion in children often manifests itself by vomiting and constipation, with drowsiness and great restlessness and distress. But here on inquiry we generally find a history of some recent acute attack, and the temperature is not elevated. Still it is often far from easy to give a decided opinion at once upon the nature of such an illness. Again, in that form of chronic abdominal derangement which I have elsewhere described under the name of "mucous disease," a sudden attack of gastric catarrh, with vomiting, constipation, and headache, may occasion very great anxiety, as the languor and wasting by which the disease had been accompanied may be easily mistaken for the premonitory stage of acute hydrocephalus. But in these cases, also, the temperature is generally low, and after a day or two, the gastric disorder having subsided, the child begins to improve. In gastric catarrh the heat of the body is not as a rule much elevated, often not at all, and the face does not show the pinched, haggard expression which is so common in intracranial disease.

During its later periods, tubercular meningitis may be confounded with any other cerebral lesion. To make a distinction, it is important to obtain a clear account of the history and progress of the illness, for the insidious beginning of tubercular meningitis is an important element in the diagnosis. In a practical paper it will be unnecessary to go through all the diseases which bear more or less resemblance, to the one we are considering. For fuller information on this subject the reader is referred to Dr. Gee's admirable treatise in Dr. Reynolds's "System of Medicine." There are, however, three diseases which it is not so very uncommon to meet with in practice, and which may be briefly alluded to. These are—simple meningitis (without grey granulations); cerebral tumour; and abscess of brain, due to disease of the petrous portion of the temporal bone, with suppuration in the mastoid cells.

Simple meningitis begins suddenly in a state of good health or after an accident, with either violent convulsions, high fever, and rapid breathing, or with severe headache, fever, and sickness; the patient then gets drowsy, and is excessively restless; the restlessness passes into wild delirium; and after a very few days collapse comes on, and the child dies exhausted. Constipation is slight, and the pulse, although intermittent, is not slow as a rule. The disease then begins violently, and increases in violence as it goes on. Its duration is short, and it rarely lasts longer than a week.

Cerebral tumour also manifests itself suddenly, generally by a convulsive fit, or some other severe nervous symptom, such as a paralytic lesion, with violent paroxysmal headache, and perhaps vomiting. It only exceptionally begins with the invasion symptoms common to tubercular meningitis—viz., vomiting, constipation, and headache alone. In any case the course of the two diseases is very different. In tumour the convulsions are violent, frequently repeated, and are followed by paralysis or rigidity in the convulsed parts. The paralytic lesions are various, and usually include some one of the organs of special sense. As a general rule, the intellect is preserved till late in the disease, and there is none of that drowsiness and dulness of mind which is one of the most prominent symptoms in tubercular meningitis. If, however, the tumour be tubercular, there are often granulations in the meninges causing meningitis. In such a case the symptoms of cerebral tumour would be confused and combined with those dependent upon the complication.

In cases of disease of the pars petrosa, with formation of intracranial abscess pushing up against the brain, the symptoms are much the same as those of cerebral tumour, provided pyæmia be not present. If there be pyæmia the case is complicated by the ordinary symptoms of that disease. The existence of long-continued otorrhœa with a history of previous deafness is a valuable assistance in the diagnosis of such cases.

Tubercular meningitis is almost inevitably fatal, and we should not therefore allow ourselves to be deceived, by any sudden amelioration in the symptoms, into a belief that the child is about to recover. Such sudden changes are not uncommon, but they are most deceptive, and when they occur it is our duty to warn the friends of the patient of the little confidence that can be placed in the apparent improvement.—*Medical Times and Gazette, July* 18, 1874, *p.* 71.

18.—THE PROGNOSIS AND TREATMENT OF CHOREA.

By Dr. Francis E. Anstie, Physician to Westminster Hospital.

[It has been proved beyond dispute that chorea is occasionally the result of embolism of a cerebral vessel, and from the knowledge of this fact it is natural that we should be tempted to imagine embolism as actually present in all these very numerous cases. This would be a grave mistake. There is, however, a connection between rheumatism and chorea which is more widely applicable to the explanation of the facts than the theory of embolism.]

In the inquiries which I have carried on for many years respecting the pathology of neuralgia, one of the most pressing questions for solution appeared to be the kind and degree of connection which existed between neuralgia and the rheumatic diathesis. There is no need to detain you with the details of that inquiry; suffice it to say that I was compelled to the conclusion that rheumatism is comparatively rarely a direct cause of neuralgia: the truly rheumatic cases of that disease are a very limited group. At the same time, however, I began to perceive another kind of connection between rheumatism and neuralgia, which I believe will also be found to hold good between rheumatism and chorea. I observed that the hereditary character of rheumatism, which is sometimes well marked, is associated with hereditary tendencies to nervous diseases of various kinds.

[After relating the history of a family illustrative of this in a marked degree, Dr. Anstie observes,]

But this is what I particularly wish to mention:—So far from the chorea universally occurring in the victims of rheumatism, it was often strikingly the reverse.

The prognosis of chorea has assumed a great importance to me in consequence of what I have seen in hospital and private practice; and surely, it is a subject much too lightly treated in the ordinary systematic works on medicine. No doubt there are men who appreciate all the gravity of the subject, but they are in a minority.

I have observed a large amount of suffering and disaster to health of which chorea has either been the direct cause or at least the prophetic forerunner. I know of few things which would more incline me to think gravely of the future of a family than the fact that I had found it much invaded by chorea.

[Of the accidental causes of chorea]

The most regular in its operation is insufficient food. Where this has been the main cause of the chorea, or the chief reason why the chorea is severe, we may hope everything from the effects of copious and generous nutrition.

It is certain that where we can *permanently* raise the scale of nutrition of a patient who has been brought into chorea chiefly by starvation, we may often save his nervous health, once for all.

The next, and one of the gravest questions in estimating prognosis of chorea, is whether the affection occurs in the presexual period, or after puberty has commenced. No doubt every experienced practitioner is more or less aware of this fact, yet I think it is possible to show its magnitude and its importance more clearly than they are usually seen.

[Dr. Anstie then relates two cases in which recovery was due to the patients not having yet reached the perilous period of life which commences with puberty, and then continues:—]

In very gloomy contrast with these cases are others which I have been unfortunate enough to see in the course of my experience. One was a girl of 17, who had menstruated from the age of 13, always profusely. She came into Westminster Hospital, not looking half so ill as the little boy whom I have mentioned; but she had not slept for several days, and was in continual general choreic movement—head, arms, legs, features, were in perpetual action. Another twenty-four hours of this made a fearful change; she got into an almost maniacal condition, and died perfectly worn out in three days from admission and in about twelve days from the beginning of the illness.

In the next place let me say a few words on the influence which the facts of heredity ought to exert in shaping our prognosis of chorea. And in this respect there are two things to be considered—the prognosis as to the result of the individual attack, and the prognosis as to the patient's future life. In respect to this, there are certain facts not commonly known, as I suppose. If the family from which the patient comes be on the whole strongly disposed to insanity, the chorea itself will not unfrequently be a trivial affair, but it is likely enough to be the first intimation of a coming mental degradation.

It occasionally happens that a boy or girl, born of a family which has numbered many nervously diseased and a few really able members, has chorea in childhood, but in place of getting intellectual harm from it, he seems to date from the period when it leaves him a most marked increase in his intellectual powers. It by no means follows that his moral nature will improve *pari passu;* indeed the spectacle of a "bullocky Orton" turning into a clever rogue like the Claimant, after a youth beset with chorea and semi-imbecility, is, I believe, less uncommon than would be supposed by most persons.

[Now as to the treatment of chorea.]

One broad assertion which is frequently made is, that simple chorea always runs its own course in either four, six, or eight weeks, and then leaves spontaneously. No doubt it does so in very many cases, yet the longer one studies chorea the more one finds that there are many exceptions to this. Not to speak of the pretty frequent cases where chorea, interrupted for the moment by the onset of some acute disease, returns with double vigour and implants itself with double tenacity in the enfeebled organism of the convalescent patient, there is a far from inconsiderable number of simple cases of chorea which tend to drag on beyond that period of three months which, as Jaccoud justly observes, marks the limit at which chorea passes into the intractable type. I have become convinced that there are several means by which at least the disease can be kept to the shorter and more normal term. And besides this, I do not doubt that we can sometimes intervene in the terrible acute cases, with the effect of saving life and preventing the patient from becoming imbecile or epileptic.

In commencing the subject of treatment it is necessary to remark that if embolism be considered the probable cause of any given case of chorea, medicinal treatment must surely be vain. Tonics and cod-liver oil may possibly be of some use in improving nutrition, but we must necessarily wait for the removal of the disease by natural processes. When, therefore, a person who is notoriously suffering from valvular disease of the heart suddenly gets an attack of some kind, paralytic or epileptic, and thereupon passes into a state of chorea, there can be no sense in adopting any special plan of treatment beyond that already indicated.

In the very numerous cases, however, in which there is neither rheumatism nor heart-disease present, we should be very foolish, in my opinion, to give up the attempt to interfere with the disease; and indeed the great discomfort which the patient suffers, and the alarm which his friends experience, will not allow us to fold our hands. I wish therefore to mention the few things which I have found really useful; and in the first place we will take the gravely threatening acute cases, such as those of the two children in the Belgrave Hospital, who have been already referred to. The boy, aged 6, is a remarkable monument of what the organism will endure from physicians. We were determined to test the power of succus conii to the utmost, and, commencing with ʒ vj daily, we got up to 8 *ounces daily of the succus* without producing any more effect than as if so much water had been given. I wish particularly to mention that the preparation was got from three different and first-rate chemists in succession, so that there is no reason to believe that we were employing an inert specimen; indeed, I believe our house-physician proved in himself the physiological activity of the sample of which the patient took 24 ounces in three days. The same result happened with the girl who was under treatment at the same time; however, she never got beyond three ounces of the succus daily.

In the excessively severe case of the boy, we tried not only conium, but bromide of potassium, camphor, ol. morrhuæ, and zinc in large doses, all with only momentary effect. We then tried Jaccoud's plan, which I have found extraordinarily successful in several cases: viz., we sprayed the skin over the whole length of the spine with ether twice daily. I will not positively say that it was *propter hoc*, but I will say that immediately *post hoc* the symptoms greatly amended, and in the course of a fortnight the lad was perfectly free from movements. We kept him in the hospital several weeks longer, in order to re-educate his speech, which was grievously deficient. But by the time he left the house he could speak quite well and manage all his limbs; nothing amiss remained beyond a slight tendency to grimace. The girl, with whom succus conii, camphor, ol. morrhuæ, bromide of potassium, and large doses of zinc had entirely failed, began to improve immediately on taking liq. arsenicalis in 5-minim doses, afterwards reduced to 3 minims. I am convinced that in one of these cases death, and in the other a protracted and very serious illness, were avoided by the use of remedies; and I will just say here that arsenic as an internal remedy, and the ether spray applied to the spine, have given me solid results such as have been obtained by no other remedy. The ether spray stands somewhat intermediate, I suppose, between the ordinary shower-bath and the spinal ice-bags of which so much has been said. Cod-liver oil and iron, however, are very useful in anæmic and generally debilitated subjects. And there is a special class of cases connected with violent ovarian excitement, or complicated with epileptic tendencies, in which the bromide of potassium is invaluable, and is the one remedy.

In the terribly dangerous acute cases of young women, especially where there has been sexual excitement and exhaustion, I believe nothing does any good but free stimulation, regular feeding per rectum, and opium in large doses. I regret to have to express my complete distrust in chloral, and in a host of other remedies that have been proposed.

In the milder stages, and especially with a view to the future bodily and mental health, there are a variety of precautions which ought to be adopted.

Under these circumstances we often get the first considerable improvement by the use of the shower-bath. This old-fashioned and useful remedy is a two-edged weapon, and if employed in cases where the nervous system is too severely disordered and prostrated may produce bad results; but in the milder and more chronic type of chorea it is still worthy of being called a sheet-anchor. It gives that preliminary bracing to the nervous and moral tone, without which we may fail to get a leverage for other treatment. There is no absolute necessity for beginning with cold water, and in delicate subjects it is better at first to use it tepid; but we can soon advance to the cold shower-bath daily or twice daily. The second item of treatment is the training of the muscular system. We can do much more good with this, in most cases, than with medicine, provided that the patient's nutrition is kept thoroughly good. This lesson has been particularly enforced by my colleague Dr. Radcliffe, who always insisted much upon the value of muscular exercises which require rhythmical movements. He used, in Westminster Hospital, to give the choreic children skipping-rope exercise; and this will be found a very useful thing either in the absence of means for more elaborate training, or as introduction to more studied and complicated movements. I may conclude by pointing out the necessity for careful training in speech, where that faculty has been at all impaired, and also of attention to mental education in every case. The mere cessation of the choreic movements ought not to make us consider that we have done our work; it is most important that a judicious system of education should be at once adopted to strengthen the mind, and especially the memory. And although every care should be taken to avoid harsh or unkind treatment, it is very needful that a firm and regular discipline should be established, for anything like slackness or vacillation on the part of the educator is sure to be reflected and exaggerated in the behaviour of a nervously weak child.—*Practitioner, June* 1874, *p.* 431.

19.—ON THE DEEP INJECTION OF CHLOROFORM FOR THE RELIEF OF TIC DOULOUREUX.

By Dr. Roberts Bartholow, M.A., Professor of the Practice of Medicine in the Medical College of Ohio, U.S.

[Dr. Bartholow published in 1878 in the Cincinnati Clinic an account of three cases of tic douloureux in which the deep injection of chloroform had given marked alleviation of pain, and his subsequent experience justifies him in regarding it as a useful therapeutic expedient.]

By the "deep injection of chloroform" is meant the insertion of the needle of the hypodermic syringe deeply into the tissues, and the injection of the chloroform into the neighbourhood of the nerve trunk, the peripheral distribution of which is the seat of the pain. In the cases which have been reported, the infra-orbital branch of the nerve has been the seat of the *tic*. In these cases the operation consists in passing the needle under the upper lip in the direction of and near to the infra-orbital foramen, and then injecting from ten to twenty minims of pure chloroform. Very considerable pain is experienced at the moment of the injection, and for a few minutes subsequently, but this presently subsides and is succeeded by a feeling of numbness and of anæsthesia of the parts into which the chloroform diffuses. A puffy swelling quickly forms at the site of the injection, and an induration, which remains for several days, follows. The numbness of the lip and cheek continues for a variable period—for a week or more. Systemic sensations, such as giddiness and sopor, due to the diffusion of the chloroform into the blood, are soon experienced, but these effects may be scarcely perceptible, and are never alarming. Indeed, the results, so far as systemic effects are concerned, may be regarded as absolutely free from danger. So much swelling and induration occurring at the site of the injection, must occasion apprehension of the formation of an abscess. Although it would be rash to deny the probability of such an untoward occurrence, yet this accident has not thus far happened in any of the reported cases of the deep injection of chloroform.

In order to ascertain more satisfactorily than I could from an examination of the patients, the degree of suffering which attends the injection and the extent and duration of the resulting numbness, I practised an experiment on myself, by inserting fifteen minims of Squibb's chloroform under the skin of the calf of the leg. The pain was by no means so severe as I had anticipated, and indeed could easily be borne. Considerable swelling resulted, and an induration as large as a filbert continued for two weeks, when it disappeared without suppuration. Immediately after the injection numbness was experienced about the site of the injection, but it then extended downwards, and on the following day had reached to the bottom of the foot. A space in which the sense of touch and the appreciation of temperature and pain were markedly diminished, existed from the point at which the chloroform was inserted to the hollow of the foot, although somewhat irregular in shape, at least two inches in transverse diameter at any point. This numbness and insensibility continued for three months, and could then be ascertained to exist by directing the attention to the part.

It is obvious that chloroform injected into a part modifies the power of the nerves to conduct impressions to the sensorium. When it is injected into the deeper parts of the face, it comes into relation to vessels having an intimate connection with the intracranial circulation. As is, of course, perfectly well known, the facial vein communicates with the pterygoid plexus and the cavernous sinus. In addition to the local benumbing effect, chloroform injected for the relief of tic douloureux must quickly act on the centres of conscious impressions. As pain means—in the ordinary cases of neuralgia of the fifth, at least—an irritation of the nerve trunk, the perception by consciousness of this impression, and its reference outwardly to the peripheral distribution, we may assume that chloroform causes an interference or interruption at several points in the circuit. Not to occupy space further in these speculations, however, I give briefly some details of the cases treated by the injections of chloroform.

Case 1.—Man, aged 45, book-keeper by occupation. Without constitutional taint. He experienced occasional paroxysms of facial pain on the right side for six years, and had various dental operations performed, including the division of all the branches of the nerve distributed to the teeth in the right upper jaw. The paroxysms, however, increased in number and severity until, for the six months previously, they occurred every few minutes. An attempt to smile, to wash his face, or to eat, brought on horrible paroxysms of pain and convulsions of the muscles. A great many remedies had been used, including the galvanic current and the hypodermic injection of morphia, but none of these had afforded any but the most temporary relief. I injected twenty minims of chloroform in the manner above described. This operation brought on a frightful paroxysm of pain, which, however, soon subsided and was succeeded by complete relief. He experienced very considerable giddiness and drowsiness in a few minutes, and these sensations continued an unprecedented time, for he was not entirely free from them for two days. An induration which followed the puffy swelling continued at the site of the injection for a number of days, but finally disappeared without suppuration. He presented himself at the expiration of several weeks to say that he had been absolutely free from pain, and he had gained so much in flesh, and his countenance was so much improved in expression, that I scarcely recognised him.

For a number of months he continued free from pain or uneasiness of any kind, but he began after this to experience intimations that he was to be visited by his old enemy. About three months ago, these forebodings were realized in an actual paroxysm (since the publication of my paper). The attack was not nearly so severe as his former ones, but lest he might experience them in their old intensity, he reported at once for treatment, and I injected five minims of chloroform. This injection gave him complete relief again, and when I last saw him, a few weeks ago, there had been no attacks, and he had had none of the warnings which he had learned to interpret as indicating the return of his pain.

Case 2.—This was a farmer aged 56, otherwise in good health. He had a history of facial pain in the right superior maxillary division of the fifth for twelve years. There had been a gradual diminution in the duration of the interval and a marked increase in the severity of the attacks. For the past year they had occurred a number of times each day. As in the case narrated above, the least motion of the face induced a paroxysm at any time, but the pain occurred spontaneously very frequently. As indicating the horrible suffering which he underwent, it will suffice to say that his family could not endure the sight of his violent sufferings and facial spasms when he attempted to eat; hence he was compelled to take his meals alone.

When I raised the lip for the purpose of inserting the chloroform, he experienced such a frightful paroxysm that I was compelled to desist, and it was only after repeated efforts that I succeeded in giving the injection. The result was fortunate. He had complete relief for some days. The pain then returning, he reported for further treatment, and another injection was administered. The relief continued much longer. In all, I believe four injections were practised, and he seems to have been permanently relieved, for months have passed without his needing further treatment.

Case 3.—This case occurred in a broken-down subject, with a history of syphilis. Intracranial lesions probably existed (exostosis ?). He was a patient of my friend and colleague Prof. James T. Whittaker, M.D., who used the chloroform injection at my request, having exhausted the usual remedies, including galvanism and the hypodermic injection of morphia. The first injection relieved him for three days, when a very large dose of morphia, hypodermically, gave him but an hour or two of very partial relief. . The pain returned, and the chloroform injections were repeated, with, however, less relief. A great deal of swelling of the face ensued, and the patient, probably disappointed in the result, ceased attending.

Case 4.—This case was reported from Georgia, and was similar in details to Cases 1 and 2. Unfortunately I cannot find in London the journal containing it, but I am able to state that the physician reporting it believed that permanent relief had been obtained.

Case 5.—This is an extremely important case reported by Dr. J. B. Mattison, of New Jersey, and to be found in the Medical Record of New York, May 1, 1874. I present here merely an abstract of the most necessary details.

C. D.—Trifacial neuralgia had existed for two years, when it suddenly disappeared and was succeeded by sciatica of left extremity which continued twelve years. The neuralgia then returned to its original site. "The paroxysms followed each other at intervals of four to six hours, at the beginning of the attacks " after its return to the fifth, and the duration of the intervals diminished "until they were occurring every few minutes. During the seizure the muscles of the affected side twitched convulsively, the face was distorted, and the patient, laying hold of anything within his reach, groaned aloud in the agony of his distress." The patient had also acquired the morphia habit. A great many remedies were used for his relief without avail, and "morphia subcutaneously in increased amount, reaching at one time five grains at a dose, without any benefit whatever." Dr. Mattison, proceeding in the manner I had indicated in my memoir, injected twenty minims of chloroform, with the result of producing with the greatest exactitude the effects which I had described, including "the *entire subsidence* of pain."

"The relief from suffering continued complete for one hour and fifty-five minutes, the sopor meanwhile being very decided, and the patient acting much as if under the influence of moderate general anæsthesia. At the expiration of this time he had a slight seizure; one half hour later another, very mild; and thirty minutes after, on opening a door to get into the outer air, he experienced one of considerable severity. The drowsiness continuing he was sent to bed, and on visiting him two hours subsequently, we learned that he had passed through two paroxysms, one slight, the other somewhat severe. The numbness of the lip and cheek was marked, the drowsiness continued. This was 5 p.m. of the 22nd, from which date until the afternoon of the 27th he remained entirely exempt from pain. Dr. Mattison had withdrawn the morphia, the use of which had been uninterrupted for six years, and instituted treatment with a view to relieve the patient of the habit.

"On the 27th the patient, in washing his face, experienced a paroxysm of trifacial pain of decided severity, which continued three minutes, but without any of the spasmodic muscular movements attending the previous attack. Two hours later he had another seizure, of diminished severity, since when until the date of this communication, a period of nearly four weeks, he had been entirely free from suffering."

The doctor, in concluding his report, says: "I may add, the man has had no return of his *tic;* his reformation as to the opium habit seems complete, not having had an atom of morphia since the chloroform injection. He has been entirely exempt for weeks (something unprecedented during fifteen years' experience) from his sciatic trouble, making in all a very interesting case, with an eminently satisfactory result."

Although the encomiums (which I do not quote) bestowed by Dr. Mattison on the method of deep injection of chloroform may not be entirely just, it must be conceded that any remedy which relieves, even for a time, so intractable and horrible a disorder as tic douloureux, is certainly a very desirable addition to our medical armamentarium. That a permanent cure of tic douloureux can be wrought by this means of treatment, or that a case dependent on intracranial lesion can be relieved for any considerable period, it would be extremely rash to assert in either case.—*Practitioner, July* 1874, *p.* 9.

20.—NOTES ON THE NITRITE OF AMYL.

By Dr. J. Crichton Browne, F.R.S.E., Medical Director, West-Riding Asylum.

In June, 1873, when administering the nitrite of amyl to a girl who was in the *status epilepticus* and had been unconscious for some hours, I was much struck by the fact that in about a minute after the inhalation was commenced there was what may be called an attack of yawning. The patient yawned profoundly and repeatedly. Never having before witnessed yawning during a state of coma, it at once occurred to me that that modification of respiration in this case must have been induced by the nitrite of amyl, which always when inhaled hastens and deepens breathing. That inference I was able to corroborate forthwith. Whenever the inhalation was interrupted the yawning ceased, whenever it was resumed the yawning recommenced. In another case of the *status epilepticus*, which occurred about a month afterwards, similar phenomena were observed. The patient, although so completely comatose that no responsive movements followed upon tickling the soles of the feet or pricking the toes, immediately yawned in the most ordinary way, as if just upon the verge of much-needed sleep, whenever a piece of lint soaked in nitrite of amyl was held before the nose and mouth. When that was done, two or three full inspirations were succeeded by one of extreme depth, accompanied by depression of the lower jaw and elevation of the ribs and scapulæ. The experiment was repeated many times, until it was quite evident that the crowning expression of drowsiness was induced by the nitrite of amyl. Some months later, Dr. Herbert Major again noticed yawning in a general paralytic patient, who was quite unconscious and at the point of death, and to whom he was administering the nitrite of amyl with the view of securing a temporary rousing. More recently, on the 24th of July last, the same effect of the nitrite of amyl was seen well exemplified. Two male patients were at that time prostrated in the *status epilepticus;* one of them, M. C., had passed through some hundreds of fits in the course of three days, and was permanently unconscious and much exhausted; and the other, J. A. M., had had nineteen fits in twenty-four hours, and was in a condition of stupor, taking no notice of what was going on around him, and making no spontaneous movements. At 2 p.m., nitrite of amyl, which had been tried at the beginning of the outbreak without perceptible benefit, was again given as an inhalation to M. C., who was then *in extremis*, lying with livid features, pin-point pupils, a pulse of 116 and a temperature of 102°, and breathing stertorously. When the inhalation had gone on for fifteen seconds, there was a voluntary movement of the right hand and an attempt to raise it, and this was speedily followed by acceleration of the respiratory movements and then by distinct yawning. The patient yawned six or seven times consecutively and prodigiously, and then turned his head and emitted a kind of sob. While the yawning was going on the pulse was somewhat quickened, and a dull flushing of the head and face became visible. The flushing travelled about half-way down the neck, but not further, and no blotches appeared on the chest, abdomen, or limbs. Three minutes after the inhalation a copious perspiration burst out over the forehead, face, and neck. At the same time an inhalation was administered to J. A. M., who could not be awoke out of his heavy slumbrous torpor. In ten seconds he likewise moved his right hand, and in fifteen seconds he likewise began to yawn. It would perhaps be more correct to say that he manifested a tendency to yawn. He opened his mouth to the widest possible extent several times in succession, but with that movement there was no prolonged inspiration, no raising of the shoulders, and no characteristic sound. With the movements of the jaw came obvious flushing and considerable reanimation. The patient looked about him, lifted his head from the pillow, and seemed more alive to surrounding circumstances than he had been for twenty-four hours previously.

Two days subsequent to these observations on M. C. and J. A. M., my colleague, Dr. Merson, who had witnessed them, was administering the nitrite of amyl to a retriever dog that had been in continuous convulsion for some hours, when he was much surprised to notice in it precisely the same movements that he had seen in J. A. M. Whenever the amyl was held before the nostrils of the animal, which at the time was quite unconscious, it beat the ground with its fore-paws, and opened and closed its mouth with rhythmic regularity. To make quite sure that these movements were not accidental or due to some other cause, Dr. Merson interrupted and resumed the inhalation many times. He found that invariably when it was resumed after an interruption these movements occurred, and that they were not induced by other kinds of stimulation.

These phenomena, as observed in the dog and in patients in a state of coma, seemed to me to be highly interesting, and to point to some hitherto unsuspected action of the nitrite of amyl. Having administered that agent to hundreds of patients in a state of consciousness, I had never seen yawning included amongst its effects; and having searched its literature, I found no record of any such action having been produced by it. That the yawning, complete or partial, in the cases described, and in the dog, was really ascribable to the nitrite of amyl, is evident, I think, from the nature of the observations made and referred to, as well as from the general observation that yawning is not known to occur in states of coma or unconsciousness due to disease in which nitrite of amyl has not been administered. Arising ordinarily out of a sense of fatigue or an oppression of the respiratory organs, it does not occur during morbid fatigue nor pulmonary engagement. I have watched innumerable cases of coma with great exhaustion, and every degree of lung congestion, and in none of them except those in which the nitrite of amyl was used have I seen yawning. That the yawning was due to some specific effect of the nitrite of amyl, and not to a mere general stimulation of the pulmonary mucous membrane under certain conditions, is deducible from the fact that other stimulants under like conditions do not produce the same effect. Thus chloroform, ether, and ammonia, given by inhalation in states of coma, do not bring on yawning as the nitrite of amyl does.

Curious to trace out further the action of the nitrite of amyl when inhaled during unconsciousness, I have during the past month administered it in this way to eighty-seven persons when sleeping, and to many of these upon several occasions. Great difficulties of course obstruct the attainment of any definite results in this way, as the most general and immediate consequence of the inhalation of the nitrite of amyl during sleep is sudden waking. At the moment that the blush appears upon the face, the person operated upon starts up, makes a number of voluntary movements, and having passed through a few seconds of bewilderment, not unnatural after so rude and extraordinary an interruption of repose, is fully alive to all that is going on around. With great care, however, and the use of small quantities of the nitrite, the inhalation may be carried out and its full effects developed during the continuance of sleep. My most successful observations have been made upon epileptic patients who sleep heavily and are not easily disturbed. Altogether I have been able to make fifty-seven satisfactory observations; that is to say, I have succeeded fifty-seven times in administering the nitrite of amyl without waking the patient, and in noting the effects which followed the inhalation. It will certainly be regarded as remarkable that in forty-two out of these fifty-seven observations there were recorded distinct movements of the mouth consentaneous with blushing of the countenance. In only one out of the forty-two observations in which movements of the mouth are reported did yawning occur. That observation was made upon a lad who was attacked by a severe fit when asleep, and to whom the inhalation was administered about five minutes after the fit, while his features were still livid and his breathing stertorous. No sooner had the flush overspread his face than he turned upon his back and yawned to the top of his bent five times, then falling again into a heavy sleep. In none of the other forty-two observations is yawning recorded, but in all of them movements kindred to yawning were noticed; that is to say, in all of them there were movements of the mouth. These movements were exceedingly various, the most common, however, being a short munching movement of the lower jaw, which was depressed and elevated as if in the act of chewing. The next most common movement was a smacking of the lips, as if in the act of tasting. It will perhaps be as well to quote from my note-book a few illustrations of the movements observed. In twenty-eight of the successful observations, movements of the hands, antecedent to or contemporaneous with those of the mouth, were noted.

1. Mary C., epileptic, ♏ 5. In twenty seconds, deepened breathing; in thirty seconds, distinct flushing; in thirty-five seconds, extension of both hands; in thirty-eight seconds, munching movement of lower jaw and movement in throat, as if swallowing was going on.
2. Ann W., epileptic, ♏ 8. In ten seconds, deepened breathing; in fifteen seconds, slight flush; in twenty seconds, deep flush; in sixty seconds, munching movements of the lower jaw, kept up for thirty seconds, when sudden waking occurred.
3. Emily L., epileptic, ♏ 10. In five seconds, deepened breathing; in nine seconds, flush, and the right hand suddenly raised above the head, after which munching movements of the lower jaw began.
4. Elizabeth W., epileptic, ♏ 15. In ten seconds, quickened breathing; in twelve seconds, movement of the right hand; in fifteen, distinct smacking of lips, continued for some time.
5. Jane A., epileptic, ♏ 5. In twenty seconds, deep flush, then short cough, then smacking of the lips.
6. James G., epileptic, ♏ 10. In ten seconds, flushing of the face; in fifteen seconds, retraction of the lips, then loud grinding of the teeth.
7. Paul G., epileptic, ♏ 10. In ten seconds, deepened breathing, becoming audible and stertorous, then movements of the lips, then swallowing, and then muttering and mumbling.
8. Job L., epileptic, ♏ 5. In ten seconds, deep flush, with blowing movements of the lips, followed by movements of the hands.
9. Thomas H., epileptic, ♏ 5. In five seconds, deepened breathing; in ten seconds, smacking of the lips, with movements of the hands, after which he turned over in bed.
10. Thomas W., epileptic, ♏ 5. In ten seconds, hand raised to head, over which it made a rubbing movement; in fifteen seconds, munching movements of mouth.

The same patients in whom these movements were observed were also caused to inhale during sleep ether and aromatic spirits of ammonia, with the view of testing whether other stimuli applied to the respiratory tract would induce like movements. It was found that ether, cautiously administered, merely deepened sleep, without producing any movements whatever; and that when movements were occasioned by it, these usually commenced round the eyes, and not the mouth. Ammonia always awoke the patient, the first movement being a sudden and violent toss of the head backwards.

As the result of these observations, it appears that nitrite of amyl, when inhaled during a state of unconsciousness, has a specific action upon the motor centre of the mouth, and calls into action, by preference, the muscles of the lips and lower jaw. The mode in which it performs this action, whether reflexly or through the agency of the vaso-motor apparatus, is as yet only a subject of speculation. The fact that the movements which it evokes are consentaneous with the appearance of flushing of the face, gives probability to the latter hypothesis; while, on the other hand, one observation, that when administered hypodermically the nitrite failed to induce yawning in a case in which it had induced it when inhaled, seems favourable to the other view. But whatever may be the explanation of the action in question, there can be no doubt that it is a significant fact, and worthy of further investigation.—*Practitioner, Sept.*, 1874, *p.* 179.

21.—ON HYDROPHOBIA.

By George Fleming, Esq., President of the Central Veterinary Medical Society; Veterinary Surgeon, Royal Engineers.

[The following article is part of a review of Mr. Fleming's work by the Editor of the British and Foreign Medico-Chirurgical Review.]

The very name "hydrophobia" is calculated to lead to error, for although, in the human subject, the dread of water is one of the symptoms of the disease, owing to the spasmodic action of the muscles of the throat, yet in the lower animals, and especially the dog, it is by no means constantly or even generally present, as is amply proved by experience. The opinion generally prevalent that the dread of water is a pathognomonic symptom in the dog may lead, and has led, to the most serious consequences, and Mr. Fleming quotes a case related by Blaine, in which a London physician of eminence pronounced an opinion that a dog which had bitten three persons could not be mad because it was able to drink. Fortunately this opinion was not adopted, and the wounds inflicted by the animal were duly attended to by Blaine, and the wisdom of the precaution was proved by the result, for in five weeks a spaniel which had been bitten became rabid, and a horse which had also been bitten was likewise affected. Other examples are given, but the facts in this particular are now well known, and require little further elucidation.

Mr. Fleming is very emphatic in his statements on this point, and he tells us that—

"It is not true that a rabid dog is hydrophobous. Water does not inspire it with fear or horror, and when it is put before the animal it does not produce aversion. From the commencement to the termination of the disease there is no antipathy to water. The many hundred rabid dogs seen by Blaine, Youatt, and others, did not evince any marked aversion to that fluid; on the contrary, the animal is generally thirsty, and if water be offered it will lap it up with avidity, and will always swallow it at the commencement of the disease. When, at a later period, the constriction about the throat—symptomatic of the malady—renders swallowing difficult, it does not the less endeavour to drink, and the lappings are as frequent and prolonged as deglutition is retarded. Even then we see the suffering creature in despair plunge its entire muzzle into the vessel and gulp at the water, as if determined to overcome the convulsive closure of its throat by forcing down the fluid. . . So little dread have the canine species of water that they will ford streams and swim rivers, and when in the ferocious stage of the malady they will even do this in order to attack other creatures on the opposite bank."

A painful case is quoted, on the authority of a French writer, in which a lady who owned a greyhound, which was in the habit of sleeping under the bed, observed one morning that the animal, in addition to tearing and gnawing the coverlet, *drank a larger quantity of water than usual*, though it ate little. The lady, alarmed at this change in its conduct, consulted a veterinary surgeon, who, however, did not find anything to cause anxiety; but on the next day the animal wounded her slightly at the end of the finger when she offered it some food, and the day after this event it died, and "*had never ceased*," says the narrator of the case, "*to drink very copiously of water until the end.*" The lady was bitten on the 26th of December, and on February 4th, in the succeeding year, she was seized with hydrophobia and died on the 7th.

The symptoms of rabies in the dog as well as in other of the lower animals, as the horse, the cow, the sheep, the goat, the pig, and in poultry, are most carefully and elaborately described by Mr. Fleming, and if we pass rather lightly over this part of the subject it is only from want of space. As to the dog, which is the most frequent source of hydrophobia, it is clearly a matter of vital importance to determine whether in any given case it is the subject of rabies or not, as the lives of many human beings may depend upon the diagnosis, and it is almost needless to observe that popular views on this subject are often very erroneous, and the practices founded on those views not only erroneous but dangerous. It is shown, for instance, that the common notion of a dog being afraid of water when it is rabid is altogether a mistake, and it should also be mentioned that even violence is not necessarily characteristic of the disease, for there is a variety of it called "dumb madness," in which the poor brute is rather an object of pity than fear, but in which the danger is as great to man or other animals as in the "furious" variety. Among the most important symptoms so ably grouped together by Mr. Fleming it would appear that the sound of the bark is very characteristic, and, indeed, the author quotes M. Sanson as describing it by a musical notation; in "dumb madness," however, this symptom is of course absent. We may briefly summarise the indications of rabies in the dog by stating that the animal is at first morose, but fidgety; that it has no dread of water, but on the contrary will greedily swallow it until the spasms of the throat prevent it from doing so; that it has a great desire to bite, and at first attacks inanimate objects, as wood, straw, &c.; that its bark or howl is altered in tone, and that its fury is vented especially on animals of its own species. The mad dog, if not killed, dies from paralysis or asphyxia.

We pass over the account of the symptoms in man, because, although Mr. Fleming's description is very good, the disease is well known and is accurately described in medical books and periodicals, and the diagnosis in the human subject presents but few points of difficulty.

The morbid appearances observed after death in the lower animals are carefully considered, and are also figured by Mr. Fleming, who, however, observes, and we believe justly, that, as in other nervous diseases, the pathological changes observed in the lower animals and in man, when death has been caused by rabies and hydrophobia, are not generally at all in proportion to the severity of the symptoms observed during life; and he goes further when he states that, in many cases, it would be difficult to express an opinion as to the existence or non-existence of the disease in the lifetime of an animal, if the post-mortem appearances were alone to be relied upon. The phenomena which have been observed are chiefly those of congestion, either of the nervous centres, as of the brain and spinal cord, or of the alimentary tract, as of the fauces, the stomach, and the intestines. In man, repeated examinations have been made after death from hydrophobia, and nothing has ever been found which could satisfactorily determine the nature of the disease. The congestion of certain parts and organs, which has been observed, may, as Mr. Fleming remarks, be a consequence of the terrible disturbance of the nervous centres rather than a cause of this derangement, and the signs of inflammation are too rarely present to warrant the belief that this process has any essential connection with the phenomena. In a note at the end of the book, however, Mr. Fleming quotes some observations made by Dr. Clifford Allbutt at a meeting of the London Pathological Society, in which that physician describes certain pathological conditions of the nervous system after death from hydrophobia, and which he connects with the nervous disturbances observed during life.

The treatment of rabies and hydrophobia is in some respects unsatisfactory, because the disease, either in man or the lower animals, is necessarily fatal. Mr. Fleming does not pretend to have discovered any method of cure, and he condemns the conduct of those persons who, from credulity or ignorance, believe in the efficacy of remedial measures when once the malady has declared itself, and he is still more strong in his condemnation of those who from interested motives vaunt the discovery of specific cures for hydrophobia. But while he admits, as all must do, the incurable nature of the disease, he, nevertheless, deprecates unnecessary alarm in the minds even of those who have been injured by the bites of mad animals, because it does not necessarily follow that hydrophobia will ensue in all such cases. The somewhat prevailing practice of immediately and indiscriminately killing the animal which has inflicted the injury is obviously a foolish and mischievous one, because it is by no means always certain that the brute is really mad, and thus the human victim may be exposed unnecessarily to the torture of apprehension when, perhaps, no cause of fear exists. The advice given on this point by Mr. Fleming is that a dog suspected of or attacked by rabies, or one which has been bitten by a rabid animal, should not at once be killed and buried unless there is reason to suppose *that no person has been wounded by it*, but if a person has been bitten, then the animal should only be killed if the malady is undoubtedly present. If the case is only a suspicious one it is well not to kill the dog immediately, but to keep it securely confined and to watch it carefully, so as to observe whether rabies really supervenes; the time required for the development of the symptoms is not long, and when they are developed the animal must be killed and buried. If, too, an animal suspected or affected with the disease escapes from its owner, or from any locality, it is the urgent duty of every one to warn the police and cause strict precautionary measures to be observed.

In the case of the human subject the local preservative treatment, which alone is assuredly efficacious, must be resorted to before the absorption of the virus, and, in order to be efficacious, this treatment must be prompt, and the poison must be removed by suction, squeezing, washing, and cauterisation. If the bitten part is within the reach of the mouth of the individual attacked, he should himself at once suck the wound vigorously, or allow a bystander to perform this duty; and it is to be observed that the danger of so doing is not very great, for, as is well known in the case of certain poisonous agents of animal origin, they are not absorbed by the digestive canal unless there be some abrasion on the mouth or lips. Expression, washing, compression, and cupping, may all be employed, but, useful as these measures are, they ought to be supplemented as soon as possible by cauterisation of the injured parts, either by a powerful heat or by chemical action. Mr. Fleming does not hesitate to recommend the hot iron as undoubtedly the most convenient and perhaps one of the most effective agents that can be employed to destroy the saliva and the tissues tainted by it, and the actual cautery has this further recommendation, that several articles in common domestic use will furnish the necessary instrument. Of the chemical caustics the most efficacious are the strong fluid acids, as the nitric, hydrochloric, and sulphuric; other caustic agents, as nitrate of silver, corrosive sublimate, and chloride of zinc; and strong alkalies, as strong ammonia, and caustic potash and soda. Excision, also, is a very efficacious measure, but the greatest care should be taken that every portion of flesh likely to have been in contact with the saliva be removed. Mr. Fleming gives some very valuable and interesting tables, showing the number of cases where immunity has followed the bites of rabid animals treated by cauterisation, and of cases of death where no such precaution has been taken, and the results, as might be anticipated, are strongly in favour of the adoption of such prophylactic measures.—*British and Foreign Medico-Chirurgical Review, July* 1874, *p.* 51.

22.—SUCCESSFUL TREATMENT OF A CASE OF TETANUS.

By Dr. J. B. Carruthers, Edinburgh.

The pathology of tetanus and the most effectual remedy for that disease are yet undetermined questions in medical science. The peculiar character of the disorder and the post-mortem examinations have revealed as yet almost nothing; consequently our treatment of it must be purely empirical. Many drugs of directly opposite action have occasionally been used with apparent success in some instances of this disease. In estimating the effect of remedies, their action should always be noted, and, when beneficial, persevered in and recorded. And as there may be some facts in the following very acute case, which recently occurred in my practice, which may prove interesting to the profession, —some novelty in the treatment, and ultimately a good recovery,—I beg to offer a short account of it, as its publication appears to me to be as desirable as, on behalf of science, it may be interesting. Having previously been convinced of the therapeutic value of chloral in combating the involuntary movements of chorea, I in this case wish to allude to its action combined with bromide of potassium in tetanic spasms, and with astonishingly good effect.

The patient, J. H., aged fourteen years, a boy at school, of an active and restless disposition, had always enjoyed good health. In the end of the first week of April he got his little-finger bruised and lacerated from a piece of iron falling on it. The finger healed satisfactorily, the nail coming away afterwards. On the 18th April, he and a companion were attempting to scale a high wall; being unsuccessful in their efforts, his companion, with heavy nailed boots, mounted on the shoulders of J. H., and in consequence of the difficulty of ascending the wall, he trod severely on his shoulders—so much so that he complained more or less of pain there afterwards. Next day he was kicked on the back in an encounter with some other boys, but he was very chary about letting this out, as he rather got the worst of it.

On the 24th of April, the first day I saw him, he was very feverish, a pulse of 100, with pain on pressure over both scapular regions, for which I ordered anodyne fomentations. On the following day the symptoms were much the same, he having passed a restless night.

On the morning of the 26th he was seized with tetanic spasms, and rigidity of the muscles of the whole body, with most acute pain over the entire length of the spinal column, so much so that the least pressure with the finger on it was almost unbearable, and in fact brought on opisthotonos. As I now viewed the case as one of considerable medical interest, I asked Dr. T. Keith, of Edinburgh, to see the patient along with me. At our interview the tetanic spasms were most severe, and as the spinal pain had, if anything, increased, we injected twenty minims of nepenthe into his back, and ordered a dozen leeches to be applied over the seat of pain, and ten grains of chloral, to be given every three hours in syrup and water. At nine the same evening Dr. Warburton Begbie saw the patient along with us. The pain over the spine was now greatly relieved, but he was very restless. Pulse 130; temperature 102·2°; his jaw closed; the muscles of his abdomen and legs very rigid; his face livid; his skin warm, and covered with profuse perspiration. We all viewed the case as one of great anxiety, both from its acuteness and suddenness of attack, as well as from the gravity of the disease. The treatment now was restricted to ten grains of chloral hydrate and twenty grains of bromide of potassium in syrup and water every three hours, and to be watched with great care and quietude.

I may here state that Drs. W. Begbie and T. Keith took special interest in the case, freely giving me their valuable opinions on the salient points as they presented themselves during the treatment.

On April 27th at 10 a.m., I saw the patient, and found he had had a very restless night; was scarcely a quarter of an hour quiet during the whole night. Complains of some pain in his back, and of the burning of his tongue from the chloral; nevertheless the medicine was given during this and the following day every two hours. Pulse 122; temperature in the mouth 102·1°. Swallows milk pretty well when the tube of the cup is pushed into the side of his mouth.

April 28th. 10 a.m.: Had four hours' sleep during the night. The muscles of his legs softer and the tetanic spasms not so violent. As the pain over his spine still continued, a strip of belladonna plaster was applied over its entier length. At the time of my visit, the effort of swallowing his medicine, the taste of which he dreaded, brought on a paroxysm. In the evening of the same day an enema of castor oil and warm water was given, and the action of chloral was now distinctly seen in the congestion of his eyes.

29th. 10.30 a.m.: His bowels acted satisfactorily from the enema; had some hours' quiet sleep during the night, and on the whole his symptoms were alleviated.

30th. 10 a.m.: Slept well during the night. Has still fits of spasms frequently, but they are less easily brought about. Pulse 108; temperature 101·2°.

May 1st. 10 a.m.: Passed a good night. The muscles of the legs now much relaxed, but the rigidity of the recti abdominis and masseter continues. At 5 p.m., as Dr. W. Begbie and I entered the room, he had just awoke out of a sleep. The start at our entering brought on a spasm, which soon passed off, and he took a good drink of milk from the cup, which I may here state was his chief food during his whole illness.

2nd. 10 a.m.: Gradually improving. Slept well during the night. Can open his mouth about a quarter of an inch to-day. Has occasional attacks of pain and spasm, which only lasted a minute or two.

3rd. 10 a.m.: Newly awoke from sleep. Was very excitable and talkative, and replied, in answer to my question, that he was perfectly well, except the pain in his back. Pulse 100; temperature 101°.

4th. Progressing satisfactorily. At 5.50 p.m. Drs. Begbie and Keith expressed themselves satisfied with his general improvement.

5th. 10 a.m.: Had a good night's sleep. Pulse 96; temperature 101°. About 7 p.m. I was sent for hurriedly, as he had a severe tetanic spasm affecting his throat on awakening from sleep. When I saw him he had marked opisthotonos, and as it passed off he suffered from laryngeal symptoms of dyspnœa with phlegm, which were very distressing.

6th. Passed a restless night, and had several tetanic seizures. At our interview in the evening he was so much weaker from the return of the spasm that we thought it advisable to give him a tablespoonful of port wine every three hours.

7th. 10 a.m.: Had a good night's sleep, and is really well, only slightly weaker.

8th. 10 a.m.: Had several hours' sleep during the night and occasional spasms. In the evening he was again seized with laryngeal spasms with dyspnœa, which soon passed off after he had ejected some phlegm.

From this date the patient gradually progressed towards recovery. On the evening of May 10th the spasms were so mitigated, and the action of the chloral was so marked in his system, that we agreed to stop it, only giving the bromide in ten-grain doses every three hours, which we gradually diminished to three times daily till we discontinued it also. On the 18th May he was able to open his mouth, put out his tongue for the first time, and eat a biscuit and some meat, which he relished.

The noteworthy feature in the treatment of this case is the quantity of chloral taken by the patient, he having taken 1140 grs. in sixteen days (equal to fully 71 grs. a day) in a most acute attack of tetanus, with the result of the spasms leaving him on May 12th, exactly eighteen days from the date of seizure; while in their place the peculiar action of the medicine showed itself in a variety of ways. All kinds of delusions ensued. The boy often imagined he saw strange objects in the room, such as carriages, ships, robbers, &c. He was even allowed to keep pistols beside him to quiet him. At one time he was talking, at another time smiling, at another time crying, and at another time fighting, &c. His mind wavered very much, so much so that he did not know his father. When told that his father was beside him, he said, "That man is an impostor, and will be punished; he has just come from a railway station, and I would like to shoot him." At another time he started up at the sight of his father, and called him "Mr. Pretender." One day he called out, "There is a ship sailing round the room with cream and biscuit," and having recently eaten a biscuit he asked for another to keep it company. Another day he imagined he was fixed in a tree with his head stuck in the branches. The same day he was engaged fighting a battle, and said he would not leave till the last, and cried out, "Save that boy; they are kicking him too severely." Often he could not be persuaded he was in his own room and bed, and continually exclaimed, "Carry me home—carry me home to my own bed." Another day he fancied he saw his father's master enter a carriage with liveried servants, and cried out, "He must have been left a fortune lately, from the number of horses and carriages he has." One day he thought he was swimming in the Firth of Forth to the island of Mickery, and begged of his aunt to blow up the swimming bladder under his arms, otherwise he would sink. A few minutes afterwards he said it was all imagination. The same day he said he was sailing in the boat to Fife to visit his friends, and remarked what jolly fun he would have. He imagined various characters were in his room; but latterly he often wept bitterly at being so foolish as to believe his own imagination. It is perhaps not unworthy of record that as his delusions lessened he seemed to remember afterwards what he saw and did, and wept nervously on that account. A susceptibility to form impressions, and a quickness and fertility of imagination appeared to me to characterise all his actions. These delusions continued in many forms and varieties, but gradually lessened, till the 25th of May, when they finally ceased, and the patient is now convalescent.

The principal point of interest in this case is its acuteness, accompanied as it was with severe spinal pain. Perhaps it may be a matter of opinion what was the primary exciting cause of the tetanus. Undoubtedly it was traumatic, and probably due to the bruised little-finger. But it appears to me that the attack of acute spinal disorder from which he suffered at the commencement of his illness could only have resulted from one or other of the injuries to his back.

As regards the treatment, the marked amelioration of the symptoms on the third day after the chloral hydrate and bromide of potassium were given shows considerable efficacy in favour of these drugs in subduing the spasms. At the first the case was as disheartening as any case could well be, but by steady perseverance in the treatment the convulsions gradually weakened until they altogether ceased, and, finally, the patient got well. Although in some particulars this case may deviate from the usual professional groove of practice, I think it should furnish an interesting and not unuseful page in the history of chloral in connection with the treatment of that formidable disease, tetanus. I was much struck with the remedial effect produced by it in my little patient, whose life at one time was in extreme danger. As narrated by Dr. Reynolds, "the mind wanders much after a single large dose of chloral," and true to this peculiarity of the medicine in my case, where the quantity administered was very large, though cautiously and gradually administered, the delusions were in proportion multiplied and intensified, thus plainly establishing both the physiological and therapeutical action of the medicine.—*Lancet, September* 26, 1874, *p.* 445.

DISEASES OF THE ORGANS OF RESPIRATION.

23.—ON "REST" IN THE TREATMENT OF PULMONARY PHTHISIS.

By Dr. Frederick T. Roberts, Assistant Physician to University College Hospital, and to the Brompton Consumption Hospital.

[The idea which seems to prevail among the members of the profession generally is, that phthisis is always a constitutional, tubercular affection. This idea is quite erroneous; with reference to it, Dr. Roberts observes:]

A tolerably extensive experience has thoroughly convinced me of the following facts:—1. That pulmonary phthisis is, in a large number of cases, entirely local in its origin, having nothing whatever to do with tubercle or with any constitutional taint. 2. That in many instances where tubercle is found in the lungs at the post-mortem examination, it is the result of local irritation, or local infection due to some pre-existing morbid condition. 3. That where the formation of tubercle is the primary morbid condition, much of the subsequent destruction of the lung-tissue is the result of the inflammatory products to which it gives rise by its irritation. Were phthisis, in its commencement and progress, invariably a local manifestation of a constitutional disease, the advantages of rest would certainly be very limited; but granting it to be a local affection in a good proportion of cases, and this is much more likely to become an important element in its treatment.

The questions relating to the advantages to be derived from rest in the treatment of phthisis, either preventive or curative, may be discussed under certain headings.

1. *General rest of the body, and restriction of the respiratory functions.*—In every case of established phthisis, and also where there is a predisposition to this disease, it is of much consequence to determine carefully whether it is desirable for the patient to take exercise or not, and if so, to give as definite instructions as circumstances permit or require, with regard to the kind and amount to be indulged in, and particularly as to the degree to which the respiratory organs are to be called into action. But too commonly this matter is ignored altogether, while in other cases indiscriminate exercise is ordered, and that not seldom of a violent kind, where the indications point decidedly in the direction of rest; or, on the other hand, a patient is kept in the house or in bed who would be much the better for some out-door exercise. On this point each case must be considered on its own merits, but there are certain general indications which may, I think, be taken as guides, to which I will now briefly direct attention, first referring to those cases in which there is merely a danger of phthisis becoming developed; and, secondly, to those in which it actually exists.

While holding to the *local* origin of phthisis in a good proportion of cases, I do not for one moment question its *constitutional* origin in many of them, and it is about those cases in which there is a supposed constitutional tendency to consumption, either hereditary or acquired, that I wish to speak here. In the first place, wherever there is at all a marked hereditary predisposition to phthisis, if circumstances permit, it is very desirable that the person thus predisposed should be intelligently guided in the matter of exercise, as well as with regard to other measures having reference to the maintenance of health, especially during the period of growth and development. This does not mean that we should always be laying down positive and exact rules as to what must and what must not be done, but merely that we should exercise a general supervision over these patients. Taking the bulk of individuals hereditarily predisposed to phthisis, it may be stated as a general rule that they are quite capable of taking a fair amount of ordinary exercise, such as walking or riding, and need it too, while they are certainly the better for being out of doors and inhaling as much fresh pure air as they can get. If these patients are evidently delicate and weakly, the amount of exercise must be limited to suit their capabilities, and it is this class of patients who chiefly need to be guided.

Now there are two opposite errors which are often committed in the cases at present under consideration, and which need to be guarded against. On the one hand, these patients not uncommonly suffer from *deficient* exercise, especially during the periods of youth and adolescence. Their friends are, in not a few instances, under the impression that they are too delicate to undergo any exertion, and indulge them in idle, enervating habits, which are decidedly injurious to them. This is particularly likely to happen if the patients themselves feel languid and are easily fatigued by a little effort, their sensations being but too readily accepted as a correct indication of what they need in the way of exercise. Indeed, experience has taught me that it is no easy matter to make people comprehend the essential importance of out-door exercise in many cases of this kind, but when they do carry out the advice they usually soon recognise its advantages. Then, again, many persons predisposed to phthisis are seriously injured from want of exercise in connection with their occupation. I do think that a great deal more consideration should be given to the finding of suitable employments for such persons than is customary, not only with reference to exercise, but also to other sanitary matters. What can be expected, when they are made to follow some calling which keeps them confined to a room or office for twelve or more hours daily, deprived of all out-door exercise, and generally surrounded by anything but satisfactory hygienic conditions, but that the constitutional disease will manifest itself, especially if this happens at a tender and critical period of their life? Yet this is a true representation of the case of many of the patients with a hereditary tendency to phthisis, who present themselves in hospital and private practice. I say emphatically therefore, that if such a state of things comes under the notice of a practitioner, one of his first duties is to insist upon an immediate change to some more satisfactory employment.

The other mistake which calls for notice tends in a contrary direction to that just considered. It is not unfrequently the custom to recommend patients predisposed to consumption to practise various exercises with the view of expanding their chests. To do this without proper discrimination is decidedly wrong and may lead to very serious consequences. All violent exercises which bring the lungs into forcible play, such as running, rowing, gymnastics, &c., are dangerous in such subjects, even when they are apparently strong and well, but especially if at all delicate, and therefore need to be indulged in cautiously. Not a few cases have come under my notice in which active disease seemed to have originated in a rupture of a blood-vessel in the lungs produced in this way. Then, again, most of these persons have chests of very fair size, which do not particularly require to be enlarged. If all forms of the disease are included, my experience at Brompton Hospital has taught me that the great majority of phthisical patients can compare not unfavourably with other individuals as regards the shape and dimensions of their chests, and this is true also of a large proportion even of cases of constitutional origin. I do not, however, by any means intend to imply by these remarks that all persons exhibiting any predisposition to phthisis must be prohibited from all exercises of this kind. They are often beneficial, if indulged in moderately and with care, and if the chest should be small in any person, whether predisposed to consumption or not, various methods for expanding it may be employed with much advantage, especially in early life, provided they are carried out judiciously. Among other methods, I think a useful and safe one is to instruct the patient to go through a process of *deep breathing* for from two to five minutes every morning and evening, inspiring and expiring forcibly from twelve to fifteen times in a minute.

Coming now to those cases in which there is *actual pulmonary* mischief, I remark first that under such circumstances *all* forms of violent exertion, but especially such as call the lungs into undue play, are decidedly to be avoided, as they are liable to lead to serious harm. On the other hand, the great majority of cases of phthisis are improved by more or less walking exercise, not too vigorous, provided the conditions of climate and weather are suitable. The exact amount of such exercise to be recommended must be guided by the local and general conditions observed in each patient. When they can be indulged in, quiet riding and driving are beneficial, the latter being also very useful for those who cannot take active exercise. I am sure that many phthisical patients are injured by being kept too much at rest and indoors, or at least they are not sufficiently encouraged to go out and walk. The want of out-door exercise is one reason why the progress of many consumptive patients who go into general hospitals is anything but satisfactory. One great advantage also of sending such patients to the more genial climates is, that it enables them to go out, when otherwise they would be obliged to remain in the house. There are conditions, however, in which it becomes very important either to limit the amount of exercise considerably, or even to enjoin perfect rest for a time. Thus, exercise must be restricted if the disease is extensive or spreading rapidly; if it is decidedly of a tubercular nature; if there is a disposition to much pyrexia; and especially if, with either of the above conditions, any little exertion brings on much dyspnœa, cough, or hæmoptysis, or causes much sweating with a sense of great debility and fatigue. I particularly wish, however, to draw attention here to those cases which have a more or less *acute* origin. I believe it is extremely important that in any case beginning in this way, whether due to pneumonia, catarrh, tubercle, or whatever else it may be, the patient ought to be kept completely at rest, or even confined to bed. Not a few cases go from bad to worse either because they are not able to take the needed rest in the early stage of the disease, or because they are not instructed to do so. Hence it is a great advantage to get patients into hospital at this stage, where they can be kept at rest, and at the same time receive proper treatment of other kinds. Rest is also imperatively called for if *hæmoptysis* of any amount occurs, whether there is actual disease in the lungs or not, and even though the patient present no constitutional tendency to phthisis. It is also important if in the course of a case *acute exacerbations* should arise.

2. *The conditions of the air breathed.*—There can be no doubt but that some forms of phthisis are directly due to the habitual inhalation of air of irritating quality, especially such as holds solid particles in suspension. In a less degree it has an influence in the causation of very many other cases, as when patients are obliged to work in confined and impure atmospheres, or are exposed to cold and damp. It is obvious that when such a case comes under treatment, the first thing to be done is to remove the patient at once from conditions which are so evidently injurious, and thus give the lungs the rest which they need from the constant irritation to which they are exposed. If this is not done, not only is a cure impossible, but the disease must necessarily progress. Unfortunately patients are often prevented by circumstances from acting upon this advice, but still it should be urged as one of the most important elements in the treatment of such cases.

The effect of any kind of irritating atmosphere in exciting cough must also not be forgotten. Many phthisical patients complain that when they go out into a cold and damp or foggy atmosphere, their cough becomes very severe, and of course they should be warned against exposing themselves to these evident causes of irritation. If circumstances compel them to do so, they should wear respirators. The same applies to every condition in which the air is likely to cause irritation.

3. *Suppression of cough and other violent actions connected with the respiratory organs.*—Space will not permit me at present to enter upon my reasons for making the statement, but I have a strong belief that *cough*, especially if *severe and long-continued*, may be the *immediate cause of pulmonary phthisis*, no matter what such cough may be due to, even though it is only the result of some irritation in the throat. Hence it is, in my opinion, of great importance not to allow cough to continue for any length of time, however trivial the cause may appear to be. This applies to all individuals, but especially to those who are predisposed to consumption. Should the cough be associated with some evident pulmonary complaint, even if it is only a little bronchial catarrh, and particularly *if the apices of the lungs are affected*, the checking of long-continued cough is still more important. When phthisis is actually developed, the management of this symptom is often a matter of much difficulty. It becomes a question whether and how far it is desirable to restrain it, but it may be laid down as a general rule, that if the cough goes beyond what is necessary for getting rid of the materials formed in the lungs, it ought to be checked, and especially if it is of an irritating character, and comes on in severe, irrepressible fits. It may then do a great deal of harm if allowed to continue, by tending to increase the mischief in the lungs; by causing serious vomiting of food; by exhausting and weakening the patient very much; or by leading to some direct lesion in the lungs, such as the rupture of a blood-vessel or the bursting of a cavity with consequent pneumothorax.

It is beyond the province of this paper to allude to all the remedies which may be used to relieve cough. In practice it is often found by no means an easy matter, and one has to vary the measures employed very frequently. Various anodynes and sedatives are of course useful, especially morphia in small doses. I would draw special attention, however, to the necessity of always looking to the state of the throat and larynx, as some cause of irritation is often found here; and also of instructing the patients not to force themselves to cough, as many of them are in the habit of doing, with the view of bringing up the phlegm.

As regards other actions in which the lungs are unduly exercised, such as speaking in public, singing, &c., it is only necessary to say that these ought to be forbidden if the lungs are actually diseased, or if there is evident danger of their becoming affected.

4. *Applications of mechanical apparatus over the chest-walls, with the view of procuring local rest.*—It is to this particular mode of giving rest to diseased lung-tissue that Drs. Berkhart, Dobell, and M'Crea of Belfast have alluded in their papers on the subject, and I desire to add the results of my own observations in the same direction. That this mode of treatment is very valuable in

certain cases and for certain purposes, anyone who practises it will soon find out. And I would remark, by the way, how difficult it is to impress upon many minds the advantages of simple, common-sense measures, however obvious these may be. This seems to me to be a measure coming under this category, but very few take much notice of it. I strongly urge, therefore, upon all practitioners, that at least they should not ignore it altogether because of its simplicity, but see whether it may not be of some service to them in the treatment of cases which are anything but easy to manage as a rule.

Beginning with the form of apparatus to be employed, I think that every advantage which can be expected may be derived from strapping the chest with strips of some plaster spread on a firm material. There are positive objections to the use of any elaborate form of "lung-splint," and I do not think such an instrument is at all needed. The plan I adopt is very much like that described under "Pleurisy," except that it is only desirable to apply the plasters over a limited portion of the chest, and that in most cases it is the upper part which has to be fixed. When this is required, I practise a plan very similar to that described by Dr. M'Crea in this week's Lancet [see p. 103], passing vertical strips firmly over the shoulder from behind forwards, and others round the side.[*] The differences are, that I use broader strips; apply those round the side, some obliquely, crossing each other, others horizontally; and if there is any marked depression above or below the clavicle, I fix pads of cotton-wool in the hollows, beneath the plasters.

Let us now consider for what purposes and in what conditions this form of treatment may be of service. First, it may be employed with the view of promoting *curative* changes, and *preventing* the spread of the morbid process to healthy portions of the lungs. For this purpose it is particularly serviceable in those cases where the disease is limited to *one apex*, especially if it is of a chronic nature, or if curative changes have commenced and are advancing. Thus I feel sure that in several cases where a cavity at one apex has begun to contract, the healing process has been aided by the use of plasters. So, too, when acute pneumonia involving the apex of one lung has originated phthisical destruction, I have found the same application beneficial, as well as in a few exceptional instances where this disease has led to the same result at one base. Where both apices are affected, the application may be safely made to one of them, and sometimes with advantage, especially if the healing process has commenced there, and if the disease does not appear to be making progress. As a general rule it may be stated, that the more evidently the lung-disease is of local origin, the more limited it is; and the more clearly it appears that all active mischief has ceased and that curative changes are going on, the better is the prospect from the use of mechanical applications to the chest as a means of cure, or of prevention of further extension of disease. If the complaint is decidedly tubercular and constitutional; if it shows signs of spreading rapidly; if there is extensive disseminated disease through one lung, or *à fortiori* through both, but little, if anything, can be expected from these applications for the objects above mentioned.—*Practitioner, Aug.* 1874, *p.* 99.

24.—ON STRAPPING THE CHEST IN PHTHISIS.

By Dr. John McCrea, M.A., Medical Officer to the Belfast Dispensary.

The treatment of phthisis by restraining chest-movement deserves more attention than it has yet received. Partly for this reason, and partly to describe the appliance which I have latterly found most effective, I wish again to direct inquiry to the subject.

In the large number of cases which have come before me in the practice of the Belfast Dispensary, I have seen no remedy equal strapping the chest in efficiency and general applicability. At the same time the use of other remedies is not interfered with. The plasters used in strapping are quite able to bear the strain of walking and talking, so that gentle exercise and conversation are not forbidden ; and, indeed, I have seen both rendered enjoyable where they had previously been irksome. I have not met with a case in any stage of the disease in which there was ground for attributing any bad result to the restraint of the chest. I say this because a paper on the subject threatened grave consequences if cases were not most thoughtfully selected after an exact measurement of the proportion of lung involved. An extensive trial has convinced me that this dread is a dream and this refinement finical.

Since writing a paper which appeared in the November number of the Dublin Journal of Medical Science, I have made an improvement in the apparatus, which diminishes the frequency of the renewal of the plasters and strengthens their grip. The following description contemplates their application to the upper part of the chest. I have principally used emplastrum roborans spread on swans down. The sheet, which is half a yard wide, is to be cut into transverse strips. Each strip is eighteen inches long ; the breadth should be about three-quarters of an inch. The plasters should be only very slightly heated. The first strip runs up the back in the space between the spinal column and the posterior border of the scapula on the affected side, its starting-point being well below the level of the inferior angle of the scapula. It is to be applied gradually and deliberately, every portion being well rubbed in before the next portion is brought into contact with the skin. It is to be carried over the shoulder and down the front of the chest. In rounding the shoulder it is to be pulled tight and held so while it is being, bit by bit, brought into contact with the front of the chest, the chest just at this period being in the act of strong expiration. The next strip, which is horizontal, commences at the spine, crosses the posterior end of the first strip, passes under the axilla and on towards the sternum. It also is to be applied deliberately and with friction ; as it is rounding the chest it is to be pulled tight, the patient at the same time making a forced expiration. Other strips are to be applied in a similar manner, vertically and horizontally time about, until it is judged that a proper grasp of the chest has been obtained. I avoid the scapula as much as possible. Some of the horizontal strips should cross the sternum, and some the spine. A large rectangular piece of plaster should now be applied, occupying the interscapular space and reaching down to the last dorsal spine. Another squarish piece is to cover the front and upper part of the chest between the clavicles and mammæ. These, if smoothly applied, secure the ends of the strips from ruffling up, and give additional *points d'appui.* Finally, the whole is to be well rubbed in all over. The patient is to sit quiet for a few minutes before dressing. The plaster soils the fingers, which, however, may be easily cleaned by rubbing with coarse paper and washing with a few drops of ether. The length of the strip required of course depends upon the size of the chest and the extent of the disease. I always endeavour to control more of the lung than the portion apparently diseased. I have found it generally suitable to cut the plaster as above described. If too long, that may be easily remedied with scissors as each strip is applied. If too short—if, for instance, a vertical plaster beginning on the back does not reach sufficiently far down the front of the chest, let the next vertical plaster commence its course in front and at a sufficiently low point, and then be made to cover the former. This, besides, increases the rigidity of the apparatus, and rigidity undoubtedly is one source of its power.

In a fortnight a reapplication will probably be required. This will give a good opportunity for a careful examination of the condition of the lung. While the plasters are still on the indications of the thermometer will be most valuable. If there be an exacerbation of the symptoms, particularly of the cough, dyspnœa, or pain, if the temperature rise, or if the plasters be obviously slack, apply new ones. In an advanced case of phthisis in a girl, the girl's mother told me that she herself could tell the proper time for renewal by observing the cough become distressing at night; and, indeed, it is common for patients to ask for a reapplication. This illustrates, besides, the confidence felt in the plasters by those who have had experience of their effects. In early phthisis it is necessary to warn the patients not to mistake the amelioration of their symptoms for recovery; they should always be directed to come back. Possibly when they consider themselves quite well the thermometer or the stethoscope will indicate differently. These are the cases in which, by reapplications, repeated reapplications if necessary, we may hope for the most brilliant results.

In the paper already referred to I have related a few cases, selected with the aim of illustrating the effects of this line of treatment in different stages of the disease. We obtain immediate and marked diminution of the cough, cessation of pain, relief of dyspnœa, and reduction of temperature; and the patient usually expresses at once a feeling of great comfort. In short, I am so satisfied with the results of the numerous cases in which I have tried this method that I give it the first place among all the remedies for phthisis.

Papers on the subject.—Berkart on "Rest," &c., Lancet, Oct. 18th, 1873; a letter from myself in the following number of the same journal; my paper in the Dublin Medical Journal, November, 1873; Dobell on the "Importance and Dangers of Rest in Pulmonary Consumption," in the British Medical Journal, November 22nd, 1873.—*Lancet, July* 18, 1874, *p.* 76.

25.—ON "REST" IN THE TREATMENT OF CHEST AFFECTIONS.

By Dr. F. T. Roberts, Assistant-Physician to University College Hospital, and to the Brompton Consumption Hospital.

Pleurisy.—Before proceeding to consider the advantages to be derived from rest in certain other pulmonary affections, I may just mention a case which is at present under my care at the Brompton Hospital, and which seems to me to indicate very clearly the beneficial results to be derived from strapping the affected side in cases of pleurisy, even when there is a considerable amount of fluid effusion. The patient is a woman, aged 34, with a marked hereditary phthisical history, and she has suffered from the local and general symptoms of pulmonary phthisis for some years, but lately had been much better. She is supposed to have caught cold, and a return of the chest symptoms resulted from this, with a severe stitch in the side. When she came to the hospital, she presented an aspect of serious illness, with much emaciation. Breathing also was much distressed. On examination of the chest, the remains of old disease were found at both apices, but in addition there were the signs of considerable pleuritic effusion on the right side—so much, indeed, that I feared fixing the side could be of very little service. However, I resolved to try the effect of this treatment, and it has proved most satisfactory. The pain and distress in breathing ceased immediately the application was made, and the patient, on each occasion that she visits the hospital, alludes with gratitude to the marked relief she experienced.

But what is more important is, that absorption commenced speedily, so that in a week the fluid had greatly diminished in quantity, and at the end of a fortnight it was entirely removed. I have a strong conviction that strapping the side did in this instance check the effusion, and hasten and aid its absorption very materially. There was nothing in the internal medicines employed which could have at all promoted this object. I may add that the patient's general condition has improved considerably.

There are two other affections in which mechanical applications to the chest prove very serviceable, and these demand a brief notice.

Pleurodynia.—This complaint, which is often a very painful and annoying one, may generally be relieved completely by applying two or three strips of plaster firmly round the side over the seat of pain. The emp. roborans is a good form of plaster for these cases. It is desirable that the practitioner should himself see that the application is properly made, and that it is not left to the patient, as the result entirely depends on its being accomplished in an effectual manner.

Pneumothorax.—My own experience of this morbid condition, in medical practice, is limited to those cases in which a cavity in the lung has given way in the course of phthisis, and consequently air has escaped into the cavity of one of the pleuræ. Two classes of cases occur, differing materially as to their severity and importance. (*a*) In one set, owing to the existence of extensive adhesions or agglutinations in connection with the pleura, only a limited quantity of air escapes, and the accumulation is confined within a small space, so that respiration is not materially interfered with, and the chief symptom is the pain in the side, which has come on suddenly and is generally very considerable. Physical examination reveals the signs of local excess of air. In these cases I have found satisfactory strapping of the side give immediate relief; while as a rule no further ill-effects were experienced from the mishap, the air, I suppose, becoming absorbed, and the opening from the lung closed. (*b*) In the other class, which are far more grave, adhesions either do not exist at all, or they are insufficient to prevent the air from pervading the entire pleural sac, which therefore becomes more and more distended, the chest-wall being driven out, and the lung compressed. Under these circumstances breathing becomes greatly embarrassed; and what is often very distressing to the patient is, that there is a feeling of great distension and want of support over the side, with much difficulty in coughing. In cases such as this the application of some mechanical apparatus over the affected side is eminently serviceable, especially if employed at an early period after the perforation has taken place. This apparatus needs to be very firm and resisting, and therefore the best form is that of plaster, covered over with two or three layers of strips of bandage steeped in a mixture of gum and chalk, as described when speaking of pleurisy. Its effects are, that it limits the escape of air, if applied soon, by restraining the respiratory movements; or, if much air has already accumulated, it gives considerable relief by affording a sense of support over the side, rendering breathing more easy, and enabling the patient to cough more effectually. Should the pleural sac be much distended, however, the best plan of treatment would be to remove the air from the pleura by means of the Aspirateur, and then immediately put on the apparatus I have mentioned.—*Practitioner, May* 1874, *p.* 329.

26.—CASES OF ACUTE TUBERCULOSIS.

By Dr. J. W. F. Smith Shand, Physician to the Aberdeen Royal Infirmary.

The following cases are examples of acute miliary tuberculosis occurring in persons who had previously enjoyed good health, and who succumbed to the disease in the course of a few weeks. The supervention of acute tuberculosis in cases of chronic wasting disease is not uncommon, and the probability of its occurrence may be anticipated; but the other variety is more rare, and the difficulties experienced in the diagnosis are often very great. In itself a constitutional disorder, it often commences with the symptoms of a common cold; subsequently it may assume the characters of a specific fever—an enteric fever; and then, even with the aid that the thermometer affords, the practitioner finds himself oppressed with doubts as to the real nature of the case.

The duration of the disease and the symptoms in tuberculosis and enteric fever are so much alike that it is probable the one is not unfrequently mistaken for the other, and that the rarer disease is set down as an example of typhoid fever presenting, it may be, supposed anomalous symptoms. In other cases it is apt to be mistaken for capillary bronchitis, or even meningitis.

Case 1.—W. G., aged seventeen, a farm servant, was admitted into the Aberdeen Infirmary on April 13th, 1864, complaining of cough and weakness; no expectoration. His face was of a dusky hue, and there was great expansion of the nostrils during inspiration. There was also considerable aphonia, but he made no complaint of pain in the larynx, or in any other part of his body except the small of his back. On inspection the body was slight and spare, and the chest well formed. The respiratory movements of the thorax were much exaggerated and quickened, and, on applying the hands, rhonchial fremitus was extremely well marked. Percussion elicited a clear sound over both lungs. Auscultation gave fine dry sibilant rhonchi equally over all the chest, but they were not very intense. Heart sounds normal. Pulse 120. Tongue moist, with a light-brown fur. Bowels regular. Urine 1025; gave no precipitate with heat or nitric acid. Burning heat of skin.

He stated that his present illness came on with a cough a fortnight before admission, and he attributed it to overwork and exposure to cold and wet.

April 14th. Ordered beef-tea, and a mixture containing small doses of antimony.—15th: Cough less frequent; no expectoration. Had been delirious last night.—18th: Crepitation is heard, along with sibilus, in both mammary regions. Stop mixture.—19th: Crepitation audible over both backs. Cough has almost ceased, and there is still no expectoration. Nocturnal delirium continues. Pulse 120, weak. He is unable to stand when taken up to stool, and has occasional rigors followed by profuse perspirations. To have port wine and an extra allowance of beef-tea.—20th: Cough has entirely ceased. Left side of chest expands more than right. Breathing still forced; is now more abdominal. Dulness on percussion in right infra-axillary region. Crepitation and sibilus over other parts of chest. Great thirst. Tongue dry, with thick brown fur; dental sordes. Bowels regular. No abdominal tenderness on pressure, and no rash on skin.—21st: Confused and delirious to-day. Brandy to be added to the wine.—22nd: Diurnal wandering and nocturnal delirium continue.—23rd: Bathed in a profuse perspiration; pulse 130, fluttering; is evidently sinking. Died at 4 p.m.

Autopsy, nineteen hours after death.—(Reported by Dr. Beveridge, Pathologist.)—Between one and two pints of sero-sanguinolent fluid was found in the right pleural cavity. The right lung weighed 34 oz., and the left 29 oz.; both were in a state of venous engorgement, and equally and thickly studded with grey tuberculous granulations. The tubercles in the apex of each lung were about the size of split peas, and were larger, softer, and more isolated than those in the base, where they were of the size of pins' heads. The pericardium contained about half an ounce of fluid. The heart was small and flabby. The liver was very soft, and had small yellow tubercles sparsely scattered through its substance. The kidneys, smaller and softer than natural, were thickly studded with grey tubercles. Intestines very pale; mucous membrane not examined. Spleen healthy. Brain not examined.

Remarks.—The duration of the disease in this case was less than four weeks. After the examination on April 14th I set down the case as one of capillary bronchitis; but for the next four days I could not reconcile in my own mind the intensity of the febrile symptoms and the dyspnœa with the comparatively slight amount of bronchial râles, the diminution of the cough, and the absence of expectoration; and when I found on the 19th, that the nocturnal delirium was increasing, prostration rapidly advancing, and sordes forming on the teeth, I was disposed to look upon it as a case of typhoid fever, although there were no rose-coloured spots, abdominal pain, or diarrhœa. There was none of the orthopnœa usually found in capillary bronchitis, and during the whole period of the illness he lay almost entirely on his back with the shoulders moderately raised.

Case 2.—J. S., aged twenty-two, a farm servant, was admitted into the Royal Infirmary on Jan. 7th, 1871. About five weeks previous to his admission he got wet, and a few days after he had, as he supposed, a severe cold, which, however, did not disable him from work for nearly two weeks. About the middle of December the cough became very severe, and the expectoration was scanty. His appetite was bad and thirst great.

On admission he complained of weakness, want of breath, and pain in the chest, while his general expression was dull and stupid, and his countenance of a dusky red, almost approaching to lividity. Inspection showed that the chest movements, even on deep inspiration, were very restricted. The percussion note over both sides was equal, and, although not very resonant, still could not be called dull. On auscultation nothing was to be heard beyond soft feeble breathing. The number of respirations was 40 per minute. The sputum was scanty, frothy, and viscid. The urine contained no albumen, and the bowels were regular. The temperature was 102·2° at noon. The next two days he felt easier and better, and he was ordered beef-juice and four ounces of wine. On the 11th he complained of diarrhœa, but it was slight; and sub-crepitant râles were heard over the right lung. On the 14th he was delirious. On the 16th his temperature was 104° at noon. He died on the 17th.

At the autopsy the lungs were found much congested and equally disseminated with miliary tubercle, which in the apex of the left lung was beginning to break down into a few cavities about the size of split peas. The right lung weighed 49 oz. and the left 55 oz.; the liver 60 oz.; the right kidney 5 oz., the left 4½ oz., and they each contained a few tubercles about the size of pins' heads. The spleen weighed 8 oz., and was profusely studded with very minute tubercles about the size of pin-points. The mesenteric glands were healthy, but the solitary glands of the large intestine were enlarged and a few of them ulcerated. The small intestine was congested, but Peyer's patches were healthy.

Remarks.—Although the duration of the disease in this case was longer than that of W. G., still it was not more than seven weeks from beginning to end. I was struck at the very outset by the appearance of the man's face, which indicated very plainly that there was an impediment to the passage of blood through the lungs, and to its proper oxygenation. The general febrile condition, delirium, and diarrhœa, gave a certain resemblance to a case of enteric fever; but the history of cough and pain in the chest, the dyspnœa and lividity of face, with the almost negative information afforded by the physical examination, led me to conclude that the case was one of acute tuberculosis. In fact, a livid countenance, dyspnœa, and greatly quickened respirations, with feeble breath-sounds, or comparatively few rhonchi, and a high temperature, together with the absence of dulness on percussion and of bronchial breathing, seem to be the most positive signs of the existence of a *primary* pulmonary tuberculosis.

It may be as well to state here that I hold with Niemeyer that, "in the present stage of science, there is but one kind of tubercle—miliary tubercle, and but one form of tuberculosis—miliary tuberculosis."

Niemeyer indicates in his lectures on Phthisis that the temperature-curves in that disease are almost as regular as in typhoid fever or acute pneumonia. I cannot, however, find, either in his book or in Wunderlich's (translated by the Sydenham Society), any very distinct guide as to the type of temperature in acute tuberculosis, nor do I see how there can be much uniformity. The extent and type of tuberculosis seem to modify the temperature very considerably. So much is this the case that Wunderlich states that when tubercles occur in patients suffering from advanced phthisis, pneumonia, or cerebral disease, they sometimes fail to affect the temperature at all, or that at least their influence is very slight. Dr. Woodman, his translator, also expresses his conviction that in some cases miliary tuberculosis does not affect the temperature at all. This opinion is certainly opposed to the statement of Niemeyer, and to the experience of Dr. Sidney Ringer as stated in his book on the Temperature in Phthisis, and to my own so far as my limited observation of the temperature in these cases goes. I can only barely imagine the absence of any rise of temperature as occurring in cases of localised secondary tuberculosis with scanty deposit. The general conclusion of most observers seems to be, that, in primary tuberculosis, the more acute the pyrexia, and the more closely it approaches to the remittent type, the greater is its resemblance to enteric fever; but that in tuberculosis the temperature wave is less regular and less high, and the remissions greater. The absence of rose-coloured spots is not to be depended on in the diagnosis, as they are certainly not always present in enteric fever.

In these two cases the absence of cheesy masses in the lungs and other organs tends to disprove the theory, first advanced by Buhl and since accepted by various writers, that acute tuberculosis is a secondary process, the result of infection produced by the absorption of substances which have undergone caseous metamorphosis.

There can be no doubt, from numerous recent observations, that the miliary tubercles are situated in the connective tissue of the lung, in very intimate relation with the blood-vessels, and not in the alveoli. The alveoli may become blocked; but in uncomplicated cases this effect is produced by pressure and the swelling of their walls, and not by exudation (Rindfleisch). It is long since Virchow, in his "Cellular Pathology," pointed out the lymphoid nature of tubercle, and the very close resemblance of the cells of the tubercle granule with the corpuscles of the lymphatic glands; but it is a question whether the tubercles derive their origin solely from the lymphatic system, as propounded by Klebs, so as to be called the result of a lymphangitis.—*Lancet*, *Sept*. 26, 1874, *p*. 444.

27.—ON THE TREATMENT OF PHTHISIS BY THE PHOSPHATE OF LIME AND THE JUICE OF RAW MEAT.

By Dr. Henry Blanc, Paris.

The juice of raw meat and the phosphate of lime, combined, have given me very good results in severe cases of phthisis. Both these remedies have been prescribed in phthisis, but at present they are not much in favour. This result is due to their defective mode of administration, as none are more valuable in chronic diseases of the lungs when they are administered in a form suitable to the patient and to the disease.

The assimilation of the phosphate of lime is still an open question. Real progress has been made of late, but, nevertheless, we are far from having attained perfection; and whilst for the present we will do well to avail ourselves of the preparations placed in our hands, yet we must not rest satisfied with them, and trust to time and science to solve this very important question.

In France three preparations of phosphate of lime claim our attention. These are—the lacto-phosphate, the chlorhydro-phosphate, and the monocalcic-phosphate.

Not only science, but, unfortunately, commercial enterprise also has a great interest in this question; and, in consequence, a pamphlet war has broken out between the promoters of some of the soluble phosphates of lime. Dr. Dusart, who patronises the lacto-phosphate, and Mr. Coirre, who prepares the chlorhydro-phosphate, have based their solutions on the supposed nature of the gastric acid; the one, Dr. Dusart, believes that it is the lactic acid, and he recommends the lacto-phosphate of lime; and Mr. Coirre, convinced that it is the muriatic acid, combines this acid with the phosphate of lime.

A third competitor for the favours of the profession, Mr. Barbarin, suggests that it is probable, nay, possible, that both these gentlemen may be right, and he adds, "Why all this discussion? Having to do with a soluble phosphate, of what importance is the gastric juice?" Mr. Barbarin quotes from a recent communication made by Mr. Joulié, the pharmacien de la Maison de Santé, from which it appears that whatever the acid added to the tricalcic-phosphate, the result is one equivalent of monocalcic-phosphate, and two equivalents of another salt of lime; and if the acid employed be the lactic or the muriatic, it forms, with the base, a soluble combination, and we obtain a solution containing a mixture of both salts, and nothing more.

According to Mr. Barbarin, the lacto-phosphate does not exist any more than the chlorhydro-phosphate, and, to use his own expression, "these are two pompous words which only serve to denominate the mixture of one equivalent of monocalcic-phosphate and two equivalents of lactate of lime in the first instance; of one equivalent of monocalcic-phosphate and two equivalents of chloride of calcium in the second."

Evidently, if this chemical analysis of these salts be correct, then both the chlorhydro-phosphate and the lacto-phosphate will retain, the one under the form of chloride of calcium, the other under that of lactate of lime, two equivalents of the base more than the quantity necessary to the formation of the monocalcic-phosphate. Such is Mr. Barbarin's conclusion; *ergo*, he recommends the solution of monocalcic-phosphate which he himself prepares.

As long as the question is debated by those only who sell what they laud, the practitioner will be placed under great difficulties, not knowing what to believe or trust. I have prescribed the several preparations above-mentioned, and I have been able to make the following remarks:—The syrup of lacto-phosphate of lime (Dr. Dusart's) is well tolerated at first, but after a while it induces dyspepsia, nausea, and somnolence. Mr. Coirre's solution of chlorhydro-phosphate is not grateful to the patients, but it is well tolerated by those who are able to overcome their dislike to the rough, acid taste of the drug, and it has given me very good results. Another muriatic preparation, the wine and syrup of Chennevière, specially the wine of chlorhydro-phosphate of lime, is a very useful remedy, being both pleasing and well tolerated by the patient. I have only lately tried the monocalcic-phosphate syrup of Mr. Barbarin, not sufficiently to record an opinion as to its value or otherwise.

When the patients have not been able to persist in the use of the abovementioned preparations of phosphate of lime, I have prescribed instead a drachm to a drachm and a half daily of the syrup of triple phosphates—Easton's formula,—giving at the same time a couple of grains of phosphate of lime at the principal meals.

The cases that are progressing most favourably are those who take the muriatic solutions—Coirre's solution or Chennevière's wine—and at the same time a drachm daily of the syrup of triple phosphates. Under whatever form the phosphate of lime may be prescribed, it should *always* be taken at meals.

The treatment of phthisis by raw meat and alcohol was prominently brought to notice some years ago by Professor Fuster of Montpellier. At first the results published were so favourable that it appeared that consumption had at last been conquered; but, unfortunately, the advantages gained by this treatment were not lasting, not that the raw meat was at fault, but merely because the patient could not be induced after a certain time to swallow the raw meat, or the stomach to tolerate it. The fault rests entirely with the mode of administration, and the principles on which the treatment was based still remain good, and by improving the form under which this valuable remedy can be administered we obtain from it all the advantages possible without any of its inconveniences.

I administer the raw meat in the following manner:—A pound to a pound and a half of fresh meat, deprived of fat, bones, &c., is placed over a quick fire for a few minutes, in order to whiten and harden the external surface only; the piece of meat is then cut into two or three pieces corresponding to the size of the meat-press, and all the juice is extracted by the pressure of the powerful screw. The superficial coction is necessary to overcome the elasticity of the meat, which renders the extraction of the juice a very difficult matter unless more powerful machines be used than the simple one at present required. A pound and a half of good fresh meat gives a teacupful of juice. The juice should be prepared daily. This juice, having all the physical properties of raw meat, is easily digested, is well tolerated, and, served in the following manner, is always very grateful to the patient. The juice should be mixed with equal parts of tepid broth, made of bones and flavoured with salt and pepper, and to which tapioca, vermicelli, &c., can be added. Care, however, should be taken that the broth is never more than *tepid*, otherwise coagulation takes place, and the desired effect is not obtained.

The treatment of the consumptive patient by this method is the following: Early morning: Warm milk (not boiled), with bread and butter, and, if the appetite be good, some fat bacon and eggs. At eleven or twelve o'clock, breakfast, before which a drachm of the syrup of triple phosphate should be taken; during the meal itself, a dose of the muriatic phosphate of lime, and half the daily allowance of the raw meat juice in some broth; the meal should consist, according to appetite and digestive powers, of fish or poultry, or white meats, fresh vegetables, and a few glasses of good alcoholic wine. Dinner at six o'clock on the same principles; broth, with the remainder of the raw meat juice, and, instead of the triple phosphate, a dessert-spoonful of cod-liver oil can be taken with advantage after the meal, if the liver be not enlarged and fatty, and the digestion good. The muriatic solution, or wine of phosphate of lime, should also be taken during the dinner. At night, before retiring to rest, a cupful of warm fresh milk, diluted one-third with Vichy water.

No medicines whatsoever, beyond those mentioned, should be administered unless some special indications or some urgent symptoms claim their use. Anodynes, narcotics, cough mixtures, lozenges, blisters, inhalations, &c., are practically of no good, and but too often, by lessening the appetite or by irritating the patient, they increase the debility and hasten the fatal end. All hygienic rules—out-of-door exercise, ablution of the skin, &c.—should at the same time be carefully attended to. Under the influence of this treatment the appetite rapidly returns, the cough becomes less troublesome, the expectoration lessens, the night-sweats and all unfavourable symptoms decline and disappear, the patient gains flesh and strength, and the confirmed and helpless invalid, with proper care and prudence, can enjoy life once more.

The last winter in Paris has not been very cold, but it has been marked by variable weather, dampness, and great thermometric variations—all circumstances more unfavourable than cold to persons affected with chronic affections of the lungs; nevertheless all the cases under treatment are doing remarkably well. In all the stethoscopic signs still exist, but in none have they increased, and in several they are less marked.—*Lancet, June* 13, 1874, *p.* 831.

28.—ON THE USE OF ATROPIA IN PHTHISICAL SWEATING.

By Dr. Jas. M. Williamson, Resident Medical Officer at the Royal Hospital for Consumption, Ventnor, I.W.

In 1872, Dr. Wilson announced in the Philadelphia Medical Journal that he had successfully treated four cases of phthisical sweating with the sulphate of atropia, and last year Dr. Fräntzel, of Berlin, published an account of a more extended series of researches. Since then, however, little or no attention appears to have been paid to the subject. The following is the result of some experiments which have been made with the drug in sixteen cases under the care of Dr. A. H. Hassall at the Royal National Hospital for Consumption, Ventnor.

The sulphate of atropia is best prescribed in pill, with extract of gentian; watery solutions are not to be depended upon, for they soon spoil by keeping. The first dose should in no instance be larger than one-eightieth of a grain, and guided by the results, the dose may if necessary be increased to one-sixtieth, or even one-fiftieth of a grain; but if this latter quantity be exceeded, well-marked symptoms of poisoning will almost certainly ensue.

In each of the sixteen cases in which the remedy was tried, the first dose produced a distinct effect on the perspiration, either wholly arresting it or materially diminishing it. In only one-fourth of the cases, however, was this effect direct and permanent; that is to say, only four patients, after using the pills for a varying number of nights, were able to omit the remedy without the sweating returning. But in these four the effect was lasting, for when seen two months after the cessation each patient reported that he was still free from the slightest dampness. Of the remaining twelve cases, four found the benefit direct but temporary; that is to say, they obtained complete relief on those nights on which they took the atropia, but the perspiration returned if the pill was missed. In seven cases, although the eightieth of a grain at first diminished the sweatings, the dose had to be increased to maintain the effect. At last, however, the increasing habituation to the drug which characterised the sweats did not hold good of the toxic symptoms, for these became so marked that the remedy had to be abandoned in all the seven cases, without its having succeeded in putting a stop to the sweats in a single instance. Only one case remains, and here there appears to have been an unusual sensibility to the action of the drug. The eightieth of a grain distinctly lessened the profuse sweating each time it was tried, but after three or four attempts it had to be discontinued on account of the severe symptoms of poisoning to which it gave rise.

It will thus be seen that the remedy controlled the perspirations more or less in the whole of the sixteen cases; that the effect was direct and permanent in four; direct but temporary in four; beneficial but transitory in seven; and that it was inadmissible in only one instance. These results will be all the more striking when it is added that in many of the cases the sweatings had extended over a period of several weeks, and had resisted all the ordinary methods of treatment.

The toxic symptoms most frequently complained of were intense heat and dryness of the throat during the night, and indisposition for bodily or mental effort on the following morning. Vomiting sometimes occurred, but diarrhœa was not observed. In one case there was retention of urine for several hours. The pupil was sluggish in action, but distinct dilatation was not common except in those cases where one-fiftieth of a grain was administered. The patients often complained of dizziness and inability to read any print but that of large type.

It is well known that all efforts to check the night-sweats of phthisis too frequently fail; and although it is not urged that the sulphate of atropia is less uncertain than other remedies, it is believed that it will not be found inferior to them in obstinate cases, in some of which it was of much service after all other remedies had failed. The drug would probably prove of extreme value in combating the perspirations in those diseases (such as acute rheumatism) in which the sweating extends over a comparatively short period, and is not so inveterate as that in phthisis.—*Lancet, July* 25, 1874, *p.* 116.

29.—ON PARACENTESIS THORACIS.

By John Wood, Esq., F.R.S., Surgeon to King's College Hospital.

[Some cases lately in the wards of King's College Hospital have given the opportunity of testing the value of the different surgical ways of treating pleuritic effusions at present in vogue. In one case seventy ounces of thick pus were drawn off with the aspirator, the puncture being made in the usual place below the armpit. A free opening and the use of a drainage tube was however found to be necessary. This case recovered.]

In cases of serous effusion, not purulent, when the dyspnœa imperatively requires the removal of the fluid, the most beneficial results are to be expected from the use of the aspirator.

In using the aspirator, it is of the utmost importance to ascertain and ensure beforehand that the instrument is clean and its joints and taps in perfect order. The pointed tube or needle used for puncturing should always, in the first place, have a stilette pushed through it to clear away any particle of dried and encrusted matter, which may block up the passage, or afford a nidus of putrefaction or infection which may get into the wound and set up their undesirable processes. The india-rubber tube connecting it with the vacuum cylinder must also be washed in carbolised water or solution of the permanganate of potash, to ensure perfect sweetness; and finally, just before using, the needle should be dipped in carbolised oil. Those who are sceptical as to these precautions should remember the results which sometimes spring from a mere puncture with a foul instrument or splinter. Then the syringe itself should be examined to see that no air can be admitted through the joints. If this be the case the air will show itself in frothy bubbles as the fluid rushes into the vacuum, and there will be a danger of its getting into the pleural cavity at the next stroke of the piston; this might prove to be a cause of putrefactive changes in the pleural effusion. The admission of air is most likely to happen towards the end of the operation, when the fluid is exhausted, or nearly so.

Then as to the choice of the site in performing the operation. In this particular pretty much the same rules apply to the use of Dieulafoy's instrument as to other operations for the same purpose. In all it is advisable to tap the fluid at as low a point as possible, in order to drain it off entirely; for even under the influence of the vacuum suction the canula may clear at first a space around its point, and then the soft and elastic lung expanding to the side of the thorax with its moist and sticky surface, may prevent the lower part of the fluid from rising against gravity into the tube of the syringe. The place chosen in ordinary cases of empyema is usually either under the arm between the fifth and sixth, or with some authorities the sixth and seventh ribs. But this, although just above the level of the diaphragm, at the point where the puncture is made, is much above the floor-level of the hinder part of the pleural cavity, both as the patient sits up in bed, and much more when in his most usual position, lying down or propped up by pillows. The back part of the diaphragm curves rapidly downwards from the anterior part of the seventh to the vertebral half of the eleventh rib. The serous pleural lining of the thoracic cavity is reflected from the dome of the diaphragm to the eleventh rib, forming a cul de sac, the downward limit of which is the intercostal space between the eleventh and twelfth ribs, or the upper border of the twelfth rib at its centre. The pleura covers the inner surface of the posterior two-thirds of the tenth and eleventh ribs (sometimes, but not always, reaching the twelfth rib), and the whole of the inner surface of the osseous portion and a part of the cartilage of the seventh, eighth, and ninth. The angle at which the diaphragm arises from these ribs and their cartilages, however, is so acute, that but little space is left for the thin lower border of the lung, forming a mere groove for it to work in. This groove is deeper and narrower at the back part, and although when the lung is compressed by effusion this groove is somewhat widened and enlarged, as seen by the bulging of the intercostal spaces at this part, yet it is a matter for accurate manipulation to pass an instrument into the pleural cavity without pushing its point into the sloping surface of the diaphragm beyond. The operator may even, if too bold, transfix the diaphragm and puncture the liver lying close below and moulded upon its concave dome. This is more likely to happen if the liver is enlarged and the puncture happens to be made at the very instant of complete expiration. Sometimes the serous pleural lining is reflected from the diaphragm to the ribs a little higher than usual, and does not come quite as far down as the costal origins of the muscle. Its areolar connections here, too, are loose, and give way readily to a blunt-pointed instrument, which, if the pleura be also hardened and thickened by disease, may even push this membrane before it, and tear it from its parietal attachments without penetrating the pleural cavity at all; or, as commonly occurs, there may be adhesion of the diaphragmatic to the costal pleura at the lower and back part of the thoracic cavity. As a matter of precaution therefore it is better to choose an intercostal space somewhat higher than the lowest level of the pleural cavity for the first opening into it, although the lowest level may be theoretically the most effective for drawing off the fluid. Again, allowance must be made for any displacements of the heart and liver. If the diagnosis of fluid in the pleura be clear and correct these organs are pushed, the former over to the opposite side, and the latter towards the abdomen somewhat, and thus operative procedures on the affected side are rendered more easy. But it must not be forgotten that adhesions of the lung either to the diaphragmatic or costal pleura may altogether interfere with this change. Thus, the usually accredited position between the middle of the fifth and sixth or sixth and seventh is the safest place at which to make the first puncture. It is better to puncture the intercostal muscles close to the smooth, convex border of the rib below. Here you are less likely to meet with irregular projections or ridges of the rib. You are also less likely to meet with or injure the intercostal vessels and nerves in this situation. Usually the intercostal artery bifurcates about the middle of the rib, from which point forwards a small branch (scarcely of sufficient importance to need especial care) runs along the upper border of the rib below the space. Posterior to the lateral median line of the thorax the intercostal arteries in the spaces under consideration are of considerable size, and lie above their respective nerves, somewhat protected externally by the outer projecting lip of the intercostal groove, just external to the angle of the rib above. More anteriorly they lie nearer the middle of the intercostal space, and are endangered by an incision or puncture placed too near the upper rib. It must also be borne in mind, in operating in this region, that these vessels may be irregular in their position, or their cutaneous or other branches larger than normal. In the tenth and eleventh intercostal spaces the vessels are usually of somewhat smaller size than the rest, but in operating at a point near the vertebral column the lesser distance of their aortic origin from the seat of operation must be remembered.

But considering that adhesions, more or less extensive, may in any given case exist between the visceral and parietal layers of pleura circumscribing the effusion of matter, and limiting it as in an ordinary abscess, it is better, I think, to be guided in the choice of the site for operation to a great extent by the percussion sounds and stethoscopic indications. If the dulness of the percussion note, and the absence of respiratory sounds be more decided in one place than another, it will be better to choose that part for operating. It is well to be guided also in the choice of a situation by the presence and amount of intercostal bulging, and the absence of the expiratory wave, on principles similar to those which determine the opening of any other abscess as its "pointing" may indicate. And I would hesitate about puncturing even at the most accredited place, unless this sign was in some degree present. Adhesions are indicated mostly by a certain amount of contraction or depression, more visible at the commencement of inspiration at the intercostal space where it occurs.

In all cases an incision, long enough to admit the tip of the finger, should be made through the skin and fibres of the serratus magnus or latissimus dorsi muscles before the pointed tube or trocar is introduced,otherwise the instrument, especially if slender, may even fail to pierce the skin, or may slip over a rib or be drawn aside by the spasmodic contraction of a muscle, and, slanting off obliquely, may fail to enter the thorax, or may puncture it at a part not exactly contemplated. I make it a point to feel clearly, with the finger, the position of the upper border of the under rib, and in stout subjects also to divide some fibres of the external intercostal muscle before puncturing. In all cases where the puncture is not intended to remain open, the skin should be drawn upwards before using the scalpel, so as to form a valvular covering to the puncture when the instrument is withdrawn. Even where the puncture is a very small one, this increases the safeguards against the admission of air, so important in cases where the effusion is serous only.

In estimating the propriety of tapping the pleura in a case of hydrothorax, where the probabilities are against the presence of pus in the cavity, it should be kept in mind that a spontaneous absorption of the effused fluid as rapidly as it has occurred is a common result, especially in the young. I should say that in such cases tapping ought only to be performed when the symptoms of dyspnœa and evidences of insufficient aeration of the blood are urgent. This is of course more likely to be the case when the effusion occurs on both sides of the chest simultaneously, but this is not common. A real difficulty lies in recognising the character of the effusion before tapping it, and it frequently becomes, in fact, a decision of a question of probabilities, which can only be made certain by seeing some of the fluid. In such cases M. Dieulafoy's instrument is a very valuable means of withdrawing and inspecting the fluid without the chance of air entering the chest and setting up a suppurative or putrefactive change. If the case be one of simple hydrothorax, it is by no means necessary to draw off all the fluid to the last drop. Relief of tension and pressure upon the lung are usually sufficient to turn the scale in favour of the absorbents, and to enable them to complete the removal of the fluid which may remain. Over-anxiety to remove all the fluid increases the chances of air passing into the vacant cavity.

In cases of empyema, on the other hand, it is important to drain off the pus completely. In children and young persons, otherwise healthy, one complete removal of the pus may be followed by immediate adhesion of the lung to the pleura, and no subsequent deposit may take place. But in adults my own experience tells me that for the most part the successful treatment of empyema becomes ultimately one of free openings, and the establishment of effective drainage and thorough washing out and cleansing with antiseptic fluids. The most mild of these is Condy's fluid or a solution of the permanganate of potass. The most generally useful and effective is carbolic acid, or some of its preparations in solution; and the most powerful, both as an antiseptic and desiccant of the discharge, as well as by its absorption and general constitutional effect in scrofulous or tubercular cases, is the solution of iodine or compound iodine lotion of the Pharmacopœia. Under its use the discharge is immediately deodorised, and gradually diminished. The lung, if not hopelessly bound down, enlarges to something of its natural volume, the parietes of the chest sink inwards to meet it the rest of the way, and adhesions form around the drainage-tube, converting its track into a sinus which gradually fills up with granulations, and ultimately heals entirely. In employing this remedy the surgeon must keep in mind its tendency to act on the drainage-tube, and change the latter before it gets so friable as to endanger its breakage during extraction, and, if its condition be doubtful at the time of abstraction, to employ precautions similar to those I have described in the former part of this lecture.—*Lancet, May* 9, 1874, *p.* 646.

30.—ON TAPPING THE CHEST.

By Dr. T. Clifford Allbutt, M.A., Physician to the Leeds General Infirmary, Leeds Dispensary, and Leeds Fever Hospital.

[The difficulties of the diagnosis of pleural effusion are hardly sufficiently recognised.]

Vocal fremitus is the only sign to which we can look for any real help in cases where we have to decide between pleuritic effusion, aneurism, intra-thoracic cancer, or pleural hydatid. Practically, aneurism is usually betrayed by other signs; and hydatid, when it occurs, may be treated as a fluid effusion. But between intra-thoracic growths and effusion the diagnosis is often difficult, sometimes impossible. Suppose, for instance, the growth to start from the root of the lung and to compress the lung from below upwards, and so invade the whole side of the chest; how are we to distinguish it? In such cases vocal fremitus may help us if the bronchial tubes are not wholly occluded; but in the first place they often are, and in the second place vocal fremitus is of no use in feeble persons or in persons whose voices are hoarse or whispering,—and such conditions are common enough. That these difficulties are not merely speculative my own experience abundantly testifies. Not to speak of pneumonic consolidation, three times at least I have been distinctly wrong in diagnosing pleural effusion when intra-thoracic tumour was present, and many times my doubts have only been removed by the results of exploration. Pleuritic effusion, be it remembered, will occur often enough in middle-aged and cachectic persons, and in them the previous history is of little use. Nor is it so simple as hospital practice would teach, to make explorations. To tap the chest is to the sensitive persons we meet in private practice an "operation," and a "dry tapping" is so far a failure, however good may be the operator's collateral skill in "putting things." To tap the chest requires, of course, certain preparations for the reception of fluid should this be present; and although surgeons may call it painless, I have seen few patients who have borne it without much wincing. In these difficulties Dr. Ringer's use of the hypodermic syringe seems to me to be a very great help. It may not be new to others, but to me it is quite new, and a very happy suggestion. But let it be remembered that one puncture may not decide the matter. Even when fluid is present it may not appear at first, and to give a diagnosis of cancer after one dry puncture might be a sad blunder, as the following case will show:—

In the early part of 1873 I saw the Rev. Mr. M. with Dr. Blythman, of Swinton. His age was sixty-two, and he had been a very vigorous man up to some eight weeks before Dr. Blythman's attendance. Being unaccustomed to care of his health, he had neglected to call in any help, and on Dr. Blythman's first visit the left side of the chest was almost wholly dull. Shortly afterwards we met in consultation, and we had to decide between pleuritic effusion and cancer. Cachexia, loss of flesh, time of life, and some points in family history made cancer not improbable. His voice was loud and firm, and vocal fremitus was absent over the dull region. We pronounced in favour of fluid, and, as tapping was dreaded by the family, we determined upon a course of medicine. I have long taught that the results of the treatment of important pleuritic effusions by medicine are very bad, and I regret that we did not at once overbear the timidity of Mr. M.'s wife and daughters. As the patient lived far away from Leeds, an interval of perhaps three weeks elapsed before we met again; we then arranged to tap the chest, but again some little time elapsed before we met for the purpose. Weiss's newer aspirator was used. The operation was an anxious one, on account of the patient's position in life and of the solicitude of a large family, so that our embarrassment was great when no fluid followed the puncture. Dr. Blythman had inserted the needle in the axillary line between the seventh and eighth ribs, and he now cleared the needle repeatedly, and altered its depth and inclination, but to no purpose. He then removed the needle, and reinserted it with a sharp plunge, but to no purpose. This was a *mauvais quart d'heure* for both of us, not to mention the patient. We now rapidly reconsidered the history and the symptoms, and determined to operate again. Dr. Blythman accordingly made an incision through the muscles of the back, and inserted the trocar about two inches below the spine of the scapula. To our relief, serum flowed, and about four pints were removed. The heart, which had been much displaced and embarrassed, was relieved, and the patient did well for a time. The chest, however, refilled, and two or three weeks later the patient died suddenly of syncope the day before I had arranged to meet Dr. Blythman again with the view of repeating the operation. Without a good deal of firmness on one part, and of generous confidence on the other, the first puncture would not have been repeated, and the patient would have died under a diagnosis of cancer.

Did space permit I would record a case in which the converse state existed. A boy, aged twelve years, was tapped for me by my colleague, Mr. Jessop, under the unhesitating belief of us both that there was pleuritic effusion. The history was not unlike gradual effusion; it was left-sided, the heart was displaced, the spaces were flattened, there was no vocal fremitus, and the absence of breathing was from below upwards. We tapped unsuccessfully several times, and the post-mortem revealed a large malignant growth springing from the spine. Operation apart, diagnosis in this case was simply impossible. The cases in which diagnosis between pneumonic consolidation and pleuritic effusion proved far from easy are of course more numerous; and if breath-sounds are absent towards the base, as may be the case, and if at the same time vocal fremitus cannot be obtained anywhere in the chest on account of illness or defective voice, then nothing less than Dr. Ringer's syringe will suffice for a decision. But this is unfortunate, for, in private practice, not young ladies only, but others also, will think it strange that a physician cannot make up his mind without plunging an instrument into their chests. I must not be delayed, however, by these considerations any farther than to refer to page 416 of Dr. Ringer's essay (Practitioner, Dec. 1873), where he makes mention of difficulties of diagnosis between effusions and some forms of chronic phthisis.

It is to be hoped, therefore, that teachers will beware of speaking too confidently of the ease of distinguishing pleuritic effusions before students, who, at the outset of their own experience, may be dismayed by an unexpected dilemma. When operation in hydrothorax is required, writers are fairly agreed. It is agreed that when effusions are small they are to be left alone unless a small purulent effusion should disturb the general health. In this case it should be removed at once. Larger effusions, whether serous or purulent, should be removed at once, as they threaten both life and lung. The recorded results of the medicinal treatment of such effusions are very bad; while those of operative treatment are good, or, indeed, excellent. This doctrine has been slowly established, but now is fairly acknowledged by all men of experience. I believe that the dyspnœa (said to be sign of the needed interference) is chiefly cardiac, and in some cases is due to displacement of that organ, and in others to an overloading of the right heart, so that the severe symptoms of a rapidly increasing effusion are very like those of clot in the right heart. The cases in which delay is least excusable are the rapid and degenerating effusions of phthisical constitutions; while, on the other hand, rheumatic effusions often vanish quickly of themselves. This is fortunate, as the commonest kind of pericardial effusion is rheumatic.

I remember being called in to assist at the illness of a young man at Halifax, under the care of Mr. Smith of that town, and Mr. Joseph Teale, formerly of Leeds. He had acute rheumatism, with effusion into both pleuræ and into the pericardium, and his life was in imminent danger. In my own mind I preferred to tap the pericardium, but it seemed scarcely fair to throw the responsibility of carrying out my own plan upon Mr. Smith. So we agreed to tap the left pleura, which was dull up to the spine of the scapula, while the right was dull only up to the angle of that bone. About a pint of rapidly clotting serum was drawn off, and sufficient relief was obtained for the time. Next day the other effusions showed signs of subsidence, and before long had so disappeared that no farther interference was needed. The operation could scarcely have influenced the other two cavities.

The effusions which occur in heart or kidney disease, again do not press for immediate interference, for though they do not readily recede, they generally increase slowly, and do not tend so much to harm the lung. Pyæmic effusions, on the contrary, increase rapidly, and being, of course, purulent, should be removed on the instant of discovery. Too often, however, they will recur as soon as removed. We must operate quickly, then, in rapid serous effusions of non-rheumatic kind and in all purulent effusions. Rheumatic effusions must be watched carefully, and drawn off if they do not recede. Simple dropsies and the effusions of common acute pleurisy may be left for a while, and tapped if they assume any proportions or remain for some time without diminution. For instance, I should tap any non-rheumatic effusion which fills the chest up to the spine of the scapula, or which displaces the heart; if rheumatic I should watch it for a few days, and tap it if persistent. Smaller effusions, whether dropsical or sub-inflammatory, I should certainly tap if after a fortnight they showed no signs of subsidence.

Should we tap in cases of empyema where the pus has made itself another way? I should say "Yes" in almost every case. Where the opening is through the lung the pus is generally evacuated most imperfectly, the retained quantities are decomposed, and the lung is in great danger of breaking up. When, on the other hand, the opening is through the ribs, such opening is generally sinuous, narrow, and improperly placed. Some of the most satisfactory cures I have to record have taken place in cases of empyemic fistula—pulmonary, intercostal, or both—in which a free artificial opening was the means of rapid and permanent cure. Thirdly, What mode of operation answers best (*a*) for serum? If the serum be merely dropsical, the insertion of a fine trocar anywhere in the lower chest is sufficient: the fluid runs off, the wound is stopped by pad and plaster or a film of collodion styptic, and nothing more is needed. This may be repeated as often as required, for out of numerous cases of this kind I have never seen one which has run into empyema, although no precautions are taken by me against the entrance of air. Acute coagulating effusions in healthy constitutions do not generally recur, and they seldom become purulent, though they may do so, and the entrance of air should therefore be prevented. The rapid sub-inflammatory effusions of weakly persons who are phthisical or of phthisical families, tend quickly to pus whether tapped or not, and the entrance of air or of a dirty trocar hastens the process. For dropsical effusions, then, we require a simple exploring trocar. For inflammatory and sub-inflammatory effusions we require a carbolised trocar or needle, and some apparatus to prevent the entrance of air. One operation, even, in the latter kind, sometimes suffices if the fluid be serous. For instance, I recently attended a weakly man, with Mr. Teale and Mr. Oglesby, whose right chest was very full of serum. One operation sufficed for his cure. The loudly praised instrument called the aspirator may be invaluable in many cases, but in tapping of the pleura I have found it cumbrous and even injurious. The so-called "previous vacuum," I believe to be a dialectic refinement of no practical value, and the issue of the fluid is best regulated by the natural movements of the parts which contain it. For a time I, like others, took up the aspirator with much interest, but only to conclude that its greatest service is to have introduced into practice a number of very useful trocars and perforated needles. I have now returned to the use of the old trocar with a flexible tube, by means of which we draw off the fluid under water. Nothing can answer better. We may now inquire what mode of operation answers best for (*b*) purulent effusions? I am glad to notice that Dr. Ringer points out that empyema does not always give rise to hectic. The fact is, the concurrence of hectic depends upon the facilities of absorption. If pus be formed in a fresh pleura, and is moderate in quantity, hectic is sure to follow. If the pus by its increase and pressure closes all the superficial vessels and absorbents of the pleura, then hectic is so far prevented, as absorption is thus prevented. Or, if apart from pressure, the pleura has become spoilt and thickened, so far again are absorption and consequent hectic unlikely. Hectic or no hectic, however, it is now, I think, universally agreed that the pus must come out irrespective of its quantity. But opinions differ as to the mode of its removal. Numerous cases of my own, both in and out of hospital, have led me to the strong opinion that a free opening should be made at once. I cannot call to mind a single case, in which closed operations succeeded in effecting a cure, and in all my own cases I believe we have had to come to an open operation sooner or later. Nay, more, I am convinced that in three cases the closed operation has done harm. By relieving the intra-thoracic pressure, absorption has become possible, and hectic has set in. The open operation, on the contrary, if so managed as to give a free outlet to the pus, always allays and generally removes hectic. At the same time, I have to allow that Dr. Ringe has some cases which tell in favour of a closed operation, and as the best kind of open operation is very painful, I shall certainly test this point over again. Of late, when once satisfied that pus exists, I have regarded all close operations as at best a waste of time. Since the introduction of the aspirator I have repeated my trials of the closed operation with no better results. To turn now to the open operation, and the varieties of it. There is no doubt in my own mind that the posterior operation, recommended by Dr. Bowditch in his letter to me, which was published in the Practitioner (April, 1873), gives by far the best results. It will be remembered that Dr. Bowditch, after gauging the depth of the full pleura by the line of lowest resonance over the empty one, enters the cavity a little above this line, by dividing the muscles obliquely and passing by a free opening through the pleura in the line of the angle of the scapula. I have now tried this operation in eight cases, with the best possible results. In two of these, repeated aspirations had ended in perforation of the lung with escape of pus upwards. Both patients were in extreme illness. By the posterior operation and confinement of the patients to bed, very satisfactory improvement took place. In another case traumatic pleurisy was followed by empyema. An opening had been made between the sixth and seventh ribs in the mammary line before I saw the man, but in spite of this he languished and burnt away at an average temperature of 101°. When he came under my care, I closed the front opening and made the posterior incision. The man very rapidly recovered, and remains in perfect health. The history of a third case illustrates the difficulties which may meet us in tapping the chest. A young and otherwise healthy man came under my care at the infirmary with a filled left pleura and displaced heart. There was no doubt of the diagnosis, though oddly enough he lay throughout his illness on the sound (right) side. I ordered him to be tapped at once, and this was done with the aspirator. Eighteen ounces only were drawn off—to my great disappointment, for I estimated that at least five pints were present. On my next visit, I ordered the puncture to be repeated in another place. Again but four ounces were drawn off. Curiously enough this seemed to be, and no doubt was, followed by some absorption and subsidence of the fluid, and we hoped that no further interference would be needed. We were wrong, however, and the chest again filled. I now determined to be present at the operation myself, and to ask my surgical colleague Mr. Jessop to operate. He kindly used for me Robert's trocar, and again changed the place of puncture; but again no more than twenty ounces could be drawn off. This time the fluid was tinged with pus, and so I determined to make a free posterior opening. Five days later Mr. Jessop did this, and let out five pints at least of curdy pus. The patient is now doing well, though I regret to say that a fistulous opening formed through his lung the day before the operation. The advantage of the free posterior operation is the perfect drainage, to which both dressers and nurses freely testify. The patient mustbe kept in bed; no pus can putrefy in the thorax; and no injections will be required in uncomplicated cases. The patient must be rigorously confined to bed, not only for the position's sake, but also to avoid chill. Chill is the great cause of relapse in open pleuritic abscess, and a sudden chill may undo in a day the gradual gain of a fortnight. The drawbacks to the posterior operation are—1. Its liability to close; 2. Its severity. The liability to close is due, of course, to the depth of the wound, but with common care and good drainage-tubes we easily overcome this difficulty. The second objection is a grave one. An incision through the deep tissues of the back of the chest is nowadays a serious operation to perform without an anæsthetic. Now, this objection again is readily obviated if we may give anæsthetics. May we do so? My own feeling is strongly against anæsthesia in a person whose respiratory margin is so small and whose heart is probably displaced. But experience alone can decide this. In one only of my cases was chloroform given, and the result was fairly good. Dr. Bowditch, however, has been less fortunate. In a letter which I lately received from him he says of three cases in which ether was given—"The first, a female, bore it with some difficulty; the pulse fluttered and there was some lividity. She soon recovered when the sponge was removed." This woman went on well for a fortnight, and then died suddenly of purulent effusion into the pericardium, which was not suspected during life. In the second case, also a young woman, "death seemed so imminent during the operation, from the effects of the ether, that the most energetic means were resorted to. Tracheotomy and artificial respiration were employed, and the patient recovered at the time." But she never overcame the harm of the anæsthesia, and died in a few days (of exhaustion?) In the third case, the "woman died almost immediately after the operation, and it was admitted that the anæsthetic, to say the least, hastened, if it did not in that particular case cause death." Dr. Bowditch then refers me to four cases, published by Dr. John G. Blake, of Boston, all of which resulted favourably, but in none of them was any anæsthetic used. In a fifth and subsequent case, however, Dr. Blake used ether. "Immediately after recovery from the ether effects a severe rigor took place. This was repeated three days later, and death followed from debility and prostration." No autopsy was allowed. "Finally (says Dr. Bowditch) Dr. Firfield informs me that in one case in which he gave ether he was obliged to forbear, and finish the operation without perfect anæsthesia, the symptoms attending it being of so threatening a character that he dared not to press it." These gentlemen are agreed that the use of anæsthesia when one lung is wholly useless is to be avoided. The outcome of this is, in Dr. Bowditch's opinion, that aspiration should be used in empyema at first, the operation being stayed on the appearance of any signs of discomfort; that if a further operation be needed it must be done by free incision, without anæsthesia; that if this be refused a large trocar must be inserted, with subsequent drainage-tube of spiral wire or india-rubber, all, of course, without anæsthetic.

I differ from my valued correspondent as follows:—I have found that aspiration rarely brings about a cure, though no doubt my experience may need correction on this point; that it is certainly far from painless; that the relief of pressure without free issue for the pus not uncommonly gives rise to absorption and hectic; and, finally, that in three cases treated by aspiration I did not find that this relief stayed the passage of pus outwards by the lung, so that pulmonary evacuation occurred before incision was practised. I hold, therefore, that free incision at the earliest time is far best for the patient, and that against this lies only the pain of it, concerning which the physician must use his tact in each case. Perhaps local anæsthesia may help us, or other general anæsthetics may be less dangerous than ether. In my one case, chloroform proved harmless. If it be urged that ulceration through the lung or septic absorption are avoided by very frequent aspiration, I should reply that repeated aspirations are certainly more distressing than one incision, and that patients of mine have always shrunk from repeated aspirations. Careful reports of a score or two of aspirated cases will no doubt do much to settle the matter and for such we must await.

In conclusion, I may turn to the details of physical signs after operation, in order to say that those who expect to find a decrease of morbid signs in proportion to the decrease of the fluid contents of the pleura will nearly always be disappointed. We have to judge of the ebb and reflux of the serum or pus as well as we can from all the circumstances of the case. An expanding lung will force a small remnant of fluid over a large surface; and it is well known, no doubt, to practised observers that great tracts of dulness will remain long after all fluid of importance is removed, and, indeed, may never wholly disappear.—*Medical Times and Gazette, May* 9 *and* 26, 1874, *pp.* 497, 526.

31.—ON DISEASE OF THE ŒSOPHAGUS; WITH SPECIAL REFERENCE TO ŒSOPHAGEAL AUSCULTATION.

By Dr. Morell Mackenzie, lately Physician to the London Hospital.

[We are indebted to Dr. Hamburger, an Austrian physician, for establishing the method of examining the œsophagus by auscultation.]

Auscultation of the œsophagus is very easy, but it requires considerable practice and much patience; practice, because it is requisite to get the ear well accustomed to the normal œsophageal sounds; patience, because in each case it is necessary to apply the stethoscope successively down the whole length of the œsophagus, and to listen attentively at each spot. Let me explain to you Hamburger's method, as applied to a healthy man. We direct the patient to take a mouthful of drink—water does very well for the purpose, but a thickened fluid, such as gruel or arrow-root, answers better. We then apply the stethoscope, make a sign to the patient to swallow, and listen attentively: as the small portion of fluid, or if you will allów me somewhat arbitrarily to call it "the morsel," passes down the throat it produces various sounds, and conveys certain impressions to the mind of the auditor; the proper interpretation of these sounds constitutes the art of œsophageal auscultation. If the stethoscope be applied on a level with the hyoid bone on the side of the neck, and the patient be directed to swallow a morsel, a loud, gurgling noise is heard, which may be called the "pharyngeal sound." The word "glou-glou" has been said to imitate the pharyngeal sound, and occasionally a sound which may be represented by this word is undoubtedly heard. In order to get an idea of it "glou-glou" should be pronounced in a loud whisper; but it must be understood that in the greater number of cases the sound bears no resemblance to this word. If instead of listening in the neck the stethoscope be applied to the left side of one of the dorsal vertebræ, the true "œsophageal sound" becomes audible. The pharyngeal sound, which is due to the sudden passage of air and liquid into the pharyngeal cavity, is sometimes so loud, and so distinctly conveyed down the œsophagus, that it obscures the true œsophageal sound. In these cases it is better to let the patient take a continuous draught of water. By this means the intermingling of air and water is greatly diminished, and the œsophageal sound may be detected. The sound which is heard conveys the idea of the rapid passing downwards of a small spindle-shaped body of fluid consistence; the sound is sharp and sudden, and ceases immediately. Hamburger describes the sound as being characteristic of an egg-shaped body, about an inch in length, and half an inch in breadth, the small end of the egg being above and the large end below. Hamburger also thinks that the shape of the morsel affords a strong indication as to the condition of the muscular walls of the œsophagus, the lower end of the morsel or egg-shaped body being blunted or truncated in proportion to the feebleness of the muscular action. I must confess, however, these are refinements that I have not been able to arrive at.

The principal points which we have to consider are—first, the character of the œsophageal sound; and, secondly, the quickness of the act of deglutition. In some cases we shall find that the sound is very feeble, and occasionally altogether absent; sometimes we hear (and this often happens in organic stricture) a confused and continuous bubbling sound, lasting for several seconds; sometimes the sound is accompanied with a grating noise. The quickness of the act of deglutition is also of some importance, and is determined by placing the hand on the hyoid bone whilst the practitioner auscultates the œsophagus posteriorly: as the patient commences to swallow, the operator feels the hyoid bone rise, and can thus estimate the length of time which elapses before the morsel reaches that portion of the œsophagus which is being auscultated. The rapidity of the act varies in different people in a state of health, and can always be made to take place quite slowly. This will be at once apparent by directing a healthy man to keep on swallowing for a few minutes some rather difficult substance, such as a mealy potato. Under ordinary circumstances, the lapse of time between the entrance of the morsel into the œsophagus and its arrival opposite the stethoscope placed at the side of the eighth dorsal vertebra is so short that it cannot be determined; but after swallowing several mouthfuls of potato without drink, two or three seconds elapse before the morsel arrives at the lowest part of the œsophagus.

Information can not only be obtained as to the passage downwards of the morsel, but its regurgitation can also be perceived when from any cause it cannot descend into the stomach. And the mode in which this regurgitation takes place sometimes enables us to distinguish between a spasmodic and an organic stricture; for whilst in the latter case an appreciable time elapses before the food is forced upwards, in spasmodic stricture the regurgitation is instantaneous. Hamburger also attaches importance to the direction which the morsel takes, and asserts that in some cases, where the œsophagus is pressed upon by a tumour in the posterior mediastinal region, the œsophageal sound may be heard more distinctly on the right side of the vertebræ than on the left; and, further, that in cases of disease of the vertebræ the œsophageal sound becomes deadened and indistinct.

Difficulty of swallowing may depend on a general awkwardness in the whole act of deglutition, or on a distinctly localised trouble. Deglutition being one of those compound acts which, though voluntary in its early stages, afterwards becomes involuntary, it is natural that it should be greatly influenced by anything affecting volition. Hence it happens that the mere idea of not being able to swallow often produces such a paralysing influence that the inception of the act is disturbed. It is therefore obvious that we have to deal with very complex phenomena, and any addition to our means of diagnosis must be accepted with gratitude.

Valuable, however, as are the various special modes of examination, it is most important that you should pay particular attention to the general condition of the patient. Above all things in œsophageal cases you must notice the general state of nutrition. As diseases of the œsophagus always give rise to dysphagia, and dysphagia leads to a smaller amount of food being taken, it is obvious that in any serious disease emaciation must exist. If, therefore, a patient complain of long-standing dysphagia, and yet present no sign of losing flesh, you may be sure that there is no organic disease. In practice you will occasionally meet with stout, well-nourished women who declare that they cannot swallow at all. You will at once recognise that the obstruction in the œsophagus cannot be of much consequence. Again, you will recollect that organic disease of the œsophagus is extremely rare under forty years of age, and that its most common period of development is between fifty and sixty. It is well to bear in mind also that syphilitic disease of the œsophagus is far more common in men than in women. It is rarely met with under thirty, most commonly it is found between forty and fifty, rarely after the latter age. Nervous affections of the œsophagus, of course, most commonly affect the female sex; they are frequently met with in young delicate girls of the upper classes, but women of all ages and social conditions suffer. The men who are affected are always those of highly emotional temperament. Simple loss of power is, as might be expected, most commonly met with in old people. Here there is often a difficulty in making out a differential diagnosis between impaired innervation and malignant disease, but the absence of expectoration in the former cases is the determining point. With these few preliminary observations I will pass on to the patients themselves.

I will first bring under your notice the case of J. P., aged sixty-one, who was admitted into the hospital June 1st, 1873, suffering from dysphagia of seven weeks' duration. The disease had commenced in the previous February, and had been gradually getting worse, and when admitted he was only able to swallow fluids. He stated that he had twice had similar attacks—one in 1862, the other in 1869, but he acknowledged that he had suffered from constitutional syphilis in 1855. When first seen he was feeble and badly nourished. There was no evidence of lung disease, and he had neither cough nor expectoration. On examining his throat, the pharynx was seen to be healthy, with the exception of a slight cicatricial puckering of the anterior pillar of the fauces on the left side. The larynx was healthy, and there was no obstruction at the orifice of the œsophagus. On directing the patient to drink and auscultating the œsophagus, it was perceived that the morsel, on reaching a spot opposite the sixth dorsal vertebra, was thrown upwards or regurgitated with a loud splashing noise; the regurgitating fluid did not, however, come back into the mouth, but, after an interval of four or five seconds, passed down a second time beyond the point of obstruction, and reached the stomach. After repeating this experiment several times the morsel was regurgitated to such an extent that some of it passed into the larynx, and produced a violent attack of coughing. On attempting to pass a No. 8 bougie, a tight stricture was perceived at the junction of the lower third with the upper two-thirds of the œsophagus, and the introduction of the instrument caused slight bleeding.

The case was diagnosed to be one of syphilitic inflammation or ulceration of the mucous membrane of the œsophagus, and the patient was treated with iodide of potassium, ice, and guimauve lozenges. At the end of ten days he was able to swallow without apparent difficulty, although on auscultation it was perceived that the morsel travelled very slowly to the lower part of the œsophagus.

On examining the patient now, you will find that there is not only a certain slowness in the act of deglutition, but that there is a distinctly rough and grating noise, or friction-sound, as the morsel passes the sixth dorsal vertebra. There can be little doubt that in this case the affection was a syphilitic ulceration of the œsophagus, and that it has left some roughness at its former seat. Although this case has progressed extremely favourably, it is important to bear in mind that further thickening is likely to take place. It must be understood that the case is relieved, not cured, and that any error in diet or excess in alcohol is likely to irritate the weak spot, and lead to a recurrence of the stricture.

I may mention that, although these cases of syphilitic ulceration of the œsophagus often yield to iodide of potassium, they are occasionally followed by the growth of a truly malignant formation; it is very important therefore always to give a very guarded prognosis.

The next case which I have to bring before you is an exceedingly interesting one, as it illustrates malignant disease at a very early stage, and particularly exemplifies the value of Hamburger's method. It will also serve to call your attention to the occasional implication of a recurrent nerve in a carcinomatous growth in the immediate neighbourhood of the œsophagus.

S. C., aged forty-seven, was admitted into the hospital on the 13th of May, 1873, on account of difficulty of swallowing, which had been coming on for six weeks. He is a tall man, 5 ft. 11 in. in height; but much emaciated, of cachectic appearance, and when admitted weighed only 9 st. 1 lb., although he stated that his weight six months previously had been 12 st. 4 lb. He said that he had never had syphilis: and there were no traces of the previous occurrence of that disease in the pharynx, larynx, or any other organ. He stated that he could generally swallow liquids, but that they sometimes went "the wrong way," and gave rise to violent attacks of coughing. Solids, in the ordinary sense of the term, will not pass down at all; but he can manage bread and milk with comparative ease. On examining him with a stethoscope, we perceive a distinct hitch opposite the third dorsal vertebra, and notice that the whole act of deglutition is performed very slowly. It is impossible either above or below the seat of stricture to appreciate anything at all characteristic of a spindle or egg-shaped body, and all attempts to pass a bougie altogether fail. On examining him with the laryngoscope, the right vocal cord is seen to be immovably fixed midway between adduction and abduction; but the larynx is otherwise healthy. His breathing is not perceptibly impaired; but his voice is shrill. His condition has altered very little since his admission, with the exception that he now expectorates in considerable quantities. He has, however, gained 5 lb. in weight since he became an inmate of the hospital.

The questions which now arise are: First, What is the nature of the narrowing of the œsophagus? Secondly, How is it that, if the patient be able to swallow liquids, and even semi-solid substances, a bougie cannot be passed through the stricture? I unhesitatingly reply to the first question that the disease is malignant, and I ground my diagnosis on the fact of the implication of the recurrent laryngeal nerve. I have never known any intrinsic disease of the œsophagus, except cancer, to be associated with pressure on the recurrent nerve. Of course we often meet with cases of extrinsic narrowing of the œsophagus dependent upon mediastinal tumours where the recurrent nerve is involved, but in this case there is no question of an external tumour. Syphilitic disease of the œsophagus never gives rise to pressure on either of the recurrent nerves. With regard to the second question, the impossibility of passing a bougie is no doubt to be explained by the occurrence of a certain amount of spasm when an instrument is introduced. In giving a prognosis as to the probable duration of life in this case, if we were guided by the bougie alone, we should probably imagine that the patient could not survive beyond a few weeks; but with the information obtained by the stethoscope we may reasonably conjecture that he may live for some months. The increased expectoration is probably due to dilatation of the gullet above the seat of stricture—not, as you perhaps might imagine, to ulceration of the surface of the œsophagus. The continued obstruction at the seat of stricture has led to slight dilatation, and this dilatation has produced a pouch-like cavity. In the healthy condition a certain quantity of saliva is being constantly unconsciously swallowed; but in this poor man's case the mucus collects above the seat of stricture, and when a certain accumulation has taken place it begins to be expectorated. The implication of the recurrent nerve not only assists in diagnosis, but it also effects prognosis, for in itself it increases the dysphagia, and thus aggravates the starvation which slowly leads to death. In the ordinary act of deglutition, not only does the epiglottis cover the larynx, but there is every reason to believe that the ventricular bands and vocal cords become respectively approximated. In examining a patient with the laryngoscope and directing him to swallow, we do not see the complete approximation of these various parts, because the epiglottis in descending quickly occludes them from view; but we can perceive that, as the epiglottis descends, the ventricular bands and vocal cords approach each other. We know also that paralysis of the vocal cords often produces dysphagia, even when there is no disease (either intrinsic or extrinsic) of the œsophagus.

The next case which I shall bring under your notice is that of Mary R., an unmarried woman, aged fifty-four. She had enjoyed good health, and led an active and laborious life, up to two years ago, when she began to suffer from severe indigestion. A few months later difficulty of swallowing commenced, and she has now great trouble in taking either solids or liquids. On directing the patient to swallow, you will perceive that deglutition is accompanied with a loud gurgling noise, which can be heard at a distance of three or four yards. On auscultating her in the upper dorsal region this sound is heard much more distinctly; but below the fifth dorsal vertebra there is a peculiar tympanitic sound, such as might be expected to occur from the passage of a small quantity of fluid into a gaseous chamber. And this is what no doubt actually occurs; the lower part of the œsophagus and the stomach are distended with gas, and it is this gas which really causes the obstruction to the passage of the morsel. The cause of the dysphagia is to be found in imperfect digestion. These cases are comparatively rare. They generally yield to careful treatment of a therapeutic and dietetic character. The patient should be directed to take fluids in great moderation, and they should only be drunk at the end of a meal; charcoal or carbolic-acid lozenges are often of great service. On the other hand, it is important to avoid all local treatment of the œsophagus. Bougies and other instruments only irritate the œsophagus, and lead to dilatation of that tube.

The last patient that I shall bring before you to-day is a man whom I have treated at intervals for the last eight years, and this circumstance will at once assure you that there is no organic disease present.

W. E., aged thirty-two, a delicate-looking, poorly-nourished man, first became affected with difficulty of swallowing eleven years ago, the symptoms having first shown themselves after an attack of fever. When seen by me eight years ago he was rather worse than he is now, but he has undergone many changes in the meantime, sometimes having been scarcely able to swallow at all, at other times having been almost well. If you examine him now with the stethoscope you will notice a remarkable slowness in the act of deglutition, and a complete absence of the true œsophageal sound. His case is one of partial paralysis of the constrictors of the œsophagus, and of the muscular coat of that tube; the muscles no longer grasp the bolus, and it can therefore only descend by simple gravitation. He therefore swallows very slowly, and he will tell you that to eat his dinner comfortably he requires two hours, or at least one hour and three-quarters. This, though a moderate time for the consumption of a *diner à la Russe*, does not suit an ordinary mechanic, so he is obliged to eat a small quantity of food very frequently. Faradisation applied directly to the œsophagus is the only remedy that does him any good; it does not cure him, but it immensely improves his deglutition. Sometimes he is able to dispense with treatment for several months, and he once remained cured for two years, but he generally requires faradising every two or three weeks. The patient is a lapidary, and at one time suffered from "lapidary's cramp" with paralysis of several muscles of the thumb and index-finger of the right hand, especially of the abductor, adductor, and short flexor of the thumb, and of the abductor indicis. The nutrition of these muscles was thoroughly re-established by faradisation, and he has never had any recurrence of the disease. The weakness of the muscular structure of the œsophagus and of its constrictor muscles cannot, however, be overcome, probably because the faradaic current cannot be so exactly or so continuously applied as to the muscles of the hand. In these cases it is important to encourage the patient in taking food to swallow a large bolus. The smaller the morsel the greater the difficulty in exciting the contraction of the œsophagus.

I have reserved my observations on the subject of diet in diseases of the œsophagus until now, although that is a very important matter. All food must be very nutritious and non-irritating. Alcoholic stimulants are injurious when there is organic disease, whether malignant or inflammatory. On the other hand, they are very beneficial in cases of functional weakness—especially if taken at the commencement of a meal. Fluids alone should be used where there is organic disease; solids or semisolids in the neurotic cases. Freshly cooked meat converted into a paste, or *panada*, by a masticator or sausage machine, and served with gravy, can sometimes be taken even better than fluids. Milk, however, always remains the staple diet, and the patient should be encouraged to take several pints a day. In all cases of dysphagia it is very important to attend to the state of the teeth. I have known many cases of difficulty of swallowing, especially in old people, cured by a set of artificial teeth; and even in cases of organic disease, when the treatment can, at the best, be only palliative, improved mastication may prevent the troublesome *contretemps* of the sudden arrest of a foreign body in the œsophagus.—*Lancet*, *May* 30, 1874, *p*. 753.

32.—ON IPECACUANHA SPRAY IN WINTER COUGH AND BRONCHITIC ASTHMA.

By Dr. Sydney Ringer and William Murrell.

[The writers were first induced to try the effect of inhalation of ipecacuanha spray, by the successful use of a secret remedy by a well-known practitioner. The observations were made during January and February. No medicine was given.]

We shall first refer to winter cough. We have made observations on twenty-five patients, whose ages varied between forty-five and seventy-two, with one exception—that of a woman of thirty-two years. We purposely chose severe cases. In order to avoid burdening this paper with too much detail, we give here a typical case, which will serve in most points to illustrate the condition of the patients. Subsequently we shall report two actual cases in full.

The patient has been troubled with winter cough perhaps for many years. During the summer he is pretty well; but during the cold months, from October to May, he suffers sometimes without intermission, occasionally getting a little better and then catching cold; or perhaps he may lose his cough for a few weeks, but again takes cold on the slightest exposure. So short is the breathing that he can walk only a few yards, especially in the cold air, and finds it hard work to get upstairs, and is often quite unfitted for active life. The breathing grows worse at night, so that he cannot sleep unless the head is propped up with several pillows. He is troubled, too, with paroxysmal dyspnœa, usually at night, which may last several hours, and compels him to sit up. Sometimes the breathing is difficult only on exertion; and in those cases it is made much worse by fogs, east winds, or damp. The expectoration varies greatly; in a few cases there is very little; usually, however, it is rather abundant, and consists of mucus or pus, often with little or no rhonchus in the chest. It is often difficult to expel the expectoration. The cough is generally very violent, frequent, hacking, and paroxysmal, and the fits may last ten or twenty minutes, and even excite vomiting. They are generally brought on by exertion; nay, in bad cases so easily are they provoked that the patient is afraid to move, or even to speak. The cough and expectoration are much worse in the morning on waking. Sometimes the cough is slight, and then the expectoration is generally scanty, the distressed breathing being the chief symptom. The patient generally wheezes badly, especially at night, and in a bad case the legs are swollen. The patient is emphysematous; there is often no rhonchus, or only sonorous and sibilant or a little bubbling rhonchus at both bases.

In this common but obstinate complaint our results have been very striking, although in many of our patients so bad was the breathing that, on being shown into the outpatients' room, they dropped into a chair, and for a minute or so were unable to speak, or only in monosyllables, having no breath for a long sentence. We used the ordinary spray-producer, with ipecacuanha wine pure or variously diluted. On the first application it sometimes excites a paroxysm of coughing, which generally soon subsides, but if it continues a weaker solution should be used. The patient soon becomes accustomed to it, and inhales the spray freely into the lungs. At first a patient inhales less adroitly than he learns to do afterwards, as he is apt to arch his tongue so that it touches the soft palate, and consequently less enters the chest than when the tongue is depressed. The spray may produce dryness or roughness of the throat, with a raw sore sensation beneath the sternum, and sometimes it causes hoarseness; whilst, on the contrary, some hoarse patients recover voice with the first inhalation. As they go on with the inhalation, they feel it getting lower and lower into the chest till many say they can feel it as low as the ensiform cartilage.

The dyspnœa is the first symptom relieved. The night after the first application the paroxysmal dyspnœa was often improved, and the patient had a good night's rest, although for months before the sleep was much broken by shortness of breath and coughing. The difficulty of breathing on exertion is also quickly relieved; for often after the first administration the patient walked home much easier than he came to the hospital, and this improvement is continuous, so that in one or two days or a week the patient can walk with very little distress, a marked improvement taking place immediately after each inhalation; and although after some hours the breathing may again grow a little worse, yet some permanent improvement is gained, unless the patient catches a fresh cold. We have heard patients say that in a week's time they could walk two miles with less distress of breathing than they could walk a hundred yards before the spray was employed. In some instances two or three days' daily spraying is required before any noticeable improvement takes place, this comparatively slow effect being sometimes due to awkward inhalation, so that but little ipecacuanha passes into the bronchial tubes. The effect on the cough and expectoration is also very marked, these both greatly decreasing in a few days, though the improvement in these respects is rather slower than in the case of the breathing. Sometimes for the first few days the expectoration is rather increased. It speedily alters in character, so that it is expelled much more readily, and thus the cough becomes easier, even before the expectoration diminishes.

Treated in this way the patient is soon enabled to lie down at night with his head lower, and in a week or ten days, and sometimes earlier, can do with only one pillow. This improvement occurs in spite of fogs, damp, or east winds—nay, even whilst the weather gets daily worse, and when the patient is exposed to it the chief part of the day. All these patients came daily to the hospital. Of course it is much better to keep the patient in a warm room.

Here are short notes of two cases, the first a very successful one.

J. H., aged seventy-two, has had a winter cough for the last three years. The cough comes on in fits, and is very bad at night. Fogs greatly aggravate it. She spits about a teacupful of thick yellow phlegm in the twenty-four hours. So bad is her breath that she cannot lie down at night, but is propped up with pillows, and is always wheezing. She is obliged to stay at home for weeks together. Her lungs are emphysematous, with only sonorous râles. After the first inhalation there was great improvement—freedom from cough all night, with much easier breathing. Further improvement took place after the next day's inhalation, and still more after the third, so that on the sixth day of treatment, and after three inhalations, she reported that her breathing "was not near so troublesome; thinks nothing of it now; does not spit up half as much," and the expectoration is white and frothy. This poor woman was loud in her praise of the treatment; said she "never expected it," and "when first she came to the hospital thought she should never get about again." J. H. is now sufficiently recovered to take charge of a shop, though before her attendance at hospital she had not been out of her room for four months. She was discharged, and called a month afterwards to say that there had been no relapse.

Now comes a less tractable instance, a fair specimen of one of the more obstinate cases.

M. A., aged thirty-two, came to the hospital January 29th with a winter cough of many years' standing, and worse this winter than ever before. The cough is paroxysmal, the slightest exertion, even talking, bringing on an attack. The paroxysms vary much, but generally last ten minutes. In the twenty-four hours she spits about a teacupful of thick yellow phlegm. Extremely short-breathed, and she is quite unable to do her house-work, and at night is unable to sleep unless propped up with three pillows and a bolster. The breathing always gets worse at night. Fogs increase all her troubles. Has been hoarse for weeks, and if she talks much she altogether loses her voice. Her chest is very sore with coughing. She is emphysematous, and her breath-sounds are obscured by cooing râles.

Feb. 3rd. The patient, who has had an inhalation on five successive days, now says she is in every way much better. The breathing is much easier; the cough is not nearly so violent; her chest is less sore; the expectoration is much less; and there is very little hoarseness.

6th. The inhalations have been continued daily. The patient says she is better than she has been all the winter. The improvement in her breathing is very great, and she can now do with only one pillow at night instead of three. She sleeps much better. The cough is greatly improved, and, instead of being "aggravated" towards night, is now better at that time. Expectoration has almost ceased.

10th. Has had only one inhalation since last date, and her breathing has been a little more distressed.

12th. Has had an inhalation daily, and the dyspnœa has again nearly disappeared.

17th. Has had but one inhalation since last date. The cough now has almost left her, and she often goes twelve hours without a fit. Her breathing is so much better that she now does her own house-work, and is not propped up at night.

Discharged after ten inhalations and nineteen days' treatment.

A month afterwards she came to the hospital to say that her breathing was all right, and that she had been perfectly well since her discharge, with the exception of a slight hacking cough.

All but one of these twenty-five patients were benefited. In one case the improvement was very gradual, but there was evident temporary improvement after each inhalation. In twenty-one cases the average number of inhalations required was 9·4, and the average number of days was twelve, before the patients were discharged cured. The greatest number of inhalations in one case was eighteen, and the smallest three. The case longest under treatment required twenty-four days; the shortest, four.

In employing the ipecacuanha spray, in order to ensure as far as possible only its topical effects, we were careful to direct the patient to spit out and even to rinse out the mouth at each pause in the administration, for a much larger quantity of the wine collects in the mouth than passes into the lungs. If this precaution is not adopted, sometimes enough is swallowed to excite nausea and even vomiting, by which means the bronchial mucus is mechanically displaced, and of course in this way effects temporary improvement. Even when this precaution was observed, a protracted inhalation will excite nausea and sometimes vomiting by the absorption of the wine by the bronchial mucous membrane; though, strange to say, when thus induced, vomiting was long delayed, even for several hours—nay, sometimes not till the evening, though the inhalation was used in the morning. In the reported cases, however, improvement was not due to the nauseating effects of the spray, for we took care to avoid this contingency by administering a quantity inadequate to produce this result. The duration of each inhalation will depend on the amount of spray produced by each compression of the elastic ball, and on the susceptibility of the patient to the action of ipecacuanha. As a rule, the patient at first will bear from twenty squeezes of the spray without nausea, and will soon bear much more. After two or three squeezes, especially on the commencement of the treatment, we must pause a while. It is necessary to look at the patient's tongue and tell him to learn to depress it, for if the tongue is much arched it will hinder the passage of the spray to the lungs. It is a good plan to tell the patient to close his nose with his fingers and to breathe deeply. The inhalation should be used at first daily, and in bad cases twice or thrice in the day; afterwards every other day suffices, and the interval may be gradually extended. If the ipecacuanha wine is diluted, then the spray must be used a longer time. In cold weather the wine should be warmed.

We have tried the spray with very satisfactory results in a few cases of the following more severe though closely allied disease:—A patient for several years has suffered from severe winter cough, with much dyspnœa, cough, and expectoration; and on several occasions has spat up a considerable quantity of blood. The physical signs denote slight fibroid consolidation, with excavation of both apices, and much emphysema, perhaps atrophous in kind. There is little or no rhonchus, and no fever. The expectoration may be slight or very abundant, muco-purulent or purulent. The dyspnœa is, perhaps, very severe; and is so paroxysmal as to justify calling the case bronchial asthma, with emphysema, and fibroid phthisis. In these cases the ipecacuanha spray is almost as beneficial as in the preceding. It soon controls the dyspnœa, thus enabling the patient to sleep, and greatly lessens expectoration and cough; and by these means really improves the general health. As in the previous cases, the first inhalation may considerably improve the breathing, though the effects are not so permanent, the dyspnœa returning in the evening; so that spraying is needed night and morning, and may be necessary for weeks or months, the ipecacuanha appearing rather to give relief than to permanently cure the dyspnœa.

We have used the spray in two cases of true and severe bronchial asthma, with very opposite results. In one severe case, accompanied by a great deal of bronchitis, it gave very great relief. The other patient, not so ill, has been all his life asthmatical; and on catching even a slight cold his breathing becomes greatly oppressed. In this instance each application of the spray considerably aggravated the dyspnœa, even when the wine was diluted with an equal quantity of water. Possibly a still weaker solution might have been borne; but we are inclined to think that in this case any quantity of ipecacuanha would have disagreed, as the tightness of breathing increased almost immediately the inhalation was begun.

The successful case was a very severe one. For years this woman had suffered from bronchitic asthma, and when she applied to the hospital was unable to lie down owing to shortness of breath. She suffered also from violent paroxysmal dyspnœa, the worst attack beginning about three a.m., compelling her to start out of bed and struggle for breath. She was very emphysematous; her voice was very hoarse. The first inhalation removed the hoarseness, and much improved her breathing, which continued freer till midnight, when the dyspnœa returned. The cough was eased, and she expectorated more freely. Each inhalation always gave her very great and marked relief. She walked to the hospital with great difficulty, and was constrained to stop frequently. On entering the room she could not speak, but laboured violently and with loud wheezing to get her breath. A few inhalations would gradually set the breathing free, so that the air entered more and more, and the wheezing gradually left, till, on the completion of the inhalation, she could breathe without difficulty. As the breathing improved she could feel the spray descending lower and lower in her chest. At first it would seem to reach only the back of the tongue, then the top of the sternum, then descend to midsternum, and at last she felt as if it reached as low as the pit of the stomach. This improvement was maintained through the day, but at evening a relapse would occur, so that her nights, though at first bad, were still better than before the treatment. Soon, however, the effects became more lasting, and she slept well. On discontinuing the spray, however, her breathing again grew worse, and she was obliged to revert to the treatment; but unfortunately she so soon caught cold, and so bad was the weather, that she was obliged to stay away for days together. Whilst her breathing improved the cough and expectoration also improved, but these two symptoms continued rather troublesome. Probably in bad bronchitic asthma the spray must at first be used twice a day or oftener, and must be continued for some time to ward off the dyspnœa, for in these obstinate chronic cases the bronchitis may take a considerable time to cure. So marked was the improvement from the spray that the patient and her friends expressed their astonishment, especially at the prompt relief it gave.—*Lancet, Sept. 5*, 1874, *p.* 338.

DISEASES OF THE ORGANS OF DIGESTION.

33.—ON FOOD AND DIETETICS.

By Dr. F. W. Pavy, Physician to Guy's Hospital.

[The following is from a review of Dr. Pavy's recently published work "on Food and Dietetics."]

Of paramount importance and interest just now is the question—what is the true value of nitrogen-containing food supplies? That they must in some measure be required for tissue-building is, of course, obvious, more particularly in the young growing subject. But in what way are we to look at nitrogenised foods as contributing to force-production, now that we are aware that muscular force is not derived from the destruction of muscular tissues? Does urea, for example, represent the outcome of nitrogenised food which has been through a process which developed force applicable to vital purposes? Yes, says Dr. Pavy; but the urea itself is pure waste, and it includes nearly all the ingoing albumen of the food. His explanation is the following:—The nitrogen of albumen is about 15·5 per cent., and in passing out of the system carries with it certain proportions also of carbon, hydrogen, and nitrogen, which go to make up urea. There remains from the destruction of albumen about 66·80 per cent. of its original weight, containing 46·86 carbon, 4·79 hydrogen, and 13·15 oxygen, besides sulphur and phosphorus for utilisation and exit in another way. Urea is the inutilisable portion of the albuminous principle, but "whether it is formed as a primary product of the splitting up of albumen—that is, whether the elements at once group themselves from the albuminous compound into the combination representing it—or whether it forms the final product of a series of changes, cannot be stated." In the next paragraph to this, Dr. Pavy puts forward what may be called an argument from final causes, when he suggests that urea, which is known to be so closely allied to carbonate of ammonia, is an alternative form of the latter (one of the normal last products of organic decomposition) *designed* for the safety of the organism. Urea can pass out of the body without doing harm. Carbonate of ammonia developed in large quantities would be so powerfully irritant as to seriously endanger life.

The final conclusion to which Pavy comes as to the position of albumen as a force-producer will interest our readers. He calculates that albumen has about half the value of fat, and a greater value than either starch or sugar, as a source of force. He puts aside as needlessly visionary Liebig's latest theory (developed under the pressure of circumstances which had compelled the latter to confess that urea is not found in the muscular tissues), that there is some hidden source of force stored up in nitrogenised compounds, just as alcohol gives out in combustion more heat than its corresponding amount of sugar, though some force has been already evolved in the process of fermentation.

A variety of more or less important consequences flow from the position which Dr. Pavy (in substantial agreement with the majority of recent physiologists) assigns to nitrogenised foods. Among the most striking of these (which has for some time past become manifest) is the exaggerated value which common opinion attaches to animal food as a main article of diet. Dr. Pavy, though no vegetarian, argues strongly on this point, and on the whole we agree with him. Animal flesh, so far as it has any special (physiological) claim to be admitted into our diet, has for a long time seemed to us to be chiefly recommendable on the score of its felicitous blending of a small amount of nitrogen with a great deal of fat. On all sides the oleaginous constituents of food are acquiring daily a higher recognised value; and a vegetarian who would take care to include a proper amount of these in his *menu* would have much to say for himself. But we would remark here, that Dr. Pavy, no more than any other physiologist whom we have studied, makes any clear or precise estimate of one important matter, viz., the difference between the ages of *growth* and those of stationariness and decline, as regards the necessity for nitrogenous food-supplies. He does, however, make some forcible remarks on the necessity of frequent food-supplies for children.

In relation to the *rôle* of alcohol within the organism, we are glad to observe that Pavy admits, what we have so long contended for, that probabilities (according to the most recent discoveries in physiology) are on the whole in favour of the belief that alcohol is utilised as a force-producing food. Upon one point we are glad to have an opportunity of correcting an apparent misconception. He appears to reckon Anstie among those who believe that alcohol develops sensible heat and raises the temperature of the body. The experiments which he quotes (elevation of temperature in the ears of alcoholised animals) have long been recognised by Anstie as merely affording an instance of altered *distribution* of heat, owing to vaso-motor paralysis.

On the whole, it would seem as if we were coming very near to the old Hebrew ideal of a plenteous and nourishing diet. "Corn," if we may include a few other vegetables with it, "wine, and oil" seem to make up a very natural and very efficient diet. Flesh-feeding is mainly an affair of economy of bulk, and by suitable devices may be largely dispensed with.—*Practitioner, July* 1874, *p.* 30.

34.—ON THE TREATMENT OF FUNCTIONAL DERANGEMENTS OF THE LIVER.

By Dr. C. Murchison, LL.D., F.R.S., Physician to St. Thomas's Hospital.

1. *Diet.*—[In the treatment of functional diseases of the liver the most important thing is the diet, by errors in which, in fact, the disease frequently first takes place. Habitual lithæmia ought to be corrected by avoidance of heavy meals and saccharine and oleaginous articles of diet. A minimum of albuminous food should be taken in order to produce the least uric acid; and a minimum of carbonaceous food in order to allow the uric acid to be oxydised as much as possible.]

Great caution is necessary in all forms of lithæmia, as to alcoholic stimulants. Malt liquors, port wine, champagne, and many other wines, ought to be strictly prohibited. Claret, or a small quantity of spirit largely diluted, as a rule, answers best; but even these should be taken sparingly, and many patients do best with no stimulants at all. This is not the occasion to discuss whether alcohol is necessary for the nutrition of the body in persons subjected to much mental or bodily toil, or whether, taking the masses in all walks of life, the standard of health would be better maintained by teetotal habits or by a moderate use of alcohol. What I desire now to insist upon is, that alcoholic drinks in quantities usually regarded as compatible with, if not conducive to, health, and far short of what are necessary to affect the brain, in many persons undermine the foundations of health by deranging the liver; and that, to some individuals, even very small quantities are injurious. In persons who have been indulging largely, the risk of a sudden withdrawal of stimulants is less, I believe, than is commonly imagined. Unless there be evidence of a very weak heart, which itself may be the result of alcohol, the only unpleasant effects of sudden and complete abstinence, in my experience, have been sensations of sinking at the epigastrium and craving for alcohol, which a repetition of the stimulus has only temporarily relieved and has rendered more persistent.

2. *A Free Supply of Oxygen.*—Next to careful regulation of diet, this is the most important object to be aimed at in the treatment of functional derangement of the liver, and especially in that which induces imperfect disintegration of albumen. An excess of fresh air, indeed, will often counteract the bad effects of too large a quantity of food. Although recent observations, more especially those of Parkes, have shown that the common impression that muscular exercise materially increases the elimination of nitrogen from the body, is erroneous, there can be no doubt that exercise in the open air quickens the circulation of blood through the liver, in the manner already explained, and promotes oxydation, and that, by thus preventing the accumulation in the system of the imperfectly oxydised products of albumen, it operates beneficially in the treatment of functional derangement of the liver attended by lithæmia. The observations of Beneke and other authorities have shown that *sea-air* is an oxydising agent of great power, and that nitrogenous and sulphur-holding tissues more rapidly disintegrate under its influence. Accordingly, we find that many patients with hepatic derangement and lithæmia derive immense benefit from residence at the sea-side and sea-bathing, although unfortunately the good effects of sea-air are sometimes more than counterbalanced by unhealthy lodgings or improper and badly-cooked food.

3. *Aperients; Cholagogues.*—In a large number of cases of functional derangement of the liver, great advantage is derived from the frequent use of aperient medicines, whether there be a tendency to constipation or not. Aperients bring away not merely bile, but the products of disintegration contained in the fluid circulating between the liver and bowel prior to their further elaboration and elimination by the lungs and kidneys. Saline aperients, from the promptness of their action and the large quantity of watery exhalation from the bowel which they bring away, are among the best for the purpose now mentioned. Recourse is usually had to the sulphate of magnesia (Epsom salt), the sulphate of soda (Glauber salt), or the tartrate of potash and soda (Rochelle salt), or to various combinations of these salts with chloride of sodium, carbonate of soda,

and other alkaline salts, such as are found in the mineral waters of Carlsbad, Friederichshall, Püllna, Harrogate, or Cheltenham, or in the recently discovered Hungarian spring Hunjadi János. Daily experience shows the great benefit derived by patients with lithæmia from a course of one or other of these mineral springs, or from some artificial imitation of them, all of which are best taken with warm water, and in the morning fasting. All of these salts have little or no affinity for animal textures, so that they excite few changes in them; they cause very little irritation of the mucous membrane of the bowel, and do not excite peristalsis, so that they purge without producing griping or pain. They act apparently by preventing the reabsorption of the fluid which is constantly being exhaled from the blood-vessels in the bowel.

There are certain other aperients which have long enjoyed a great reputation for promoting the secretion and discharge of bile, and otherwise acting beneficially in derangements of the liver, and which have accordingly been designated *Cholagogues*. Among these remedies, *mercury* and its preparations hold a pre-eminent place. At the present day, mercury has lost much of its former reputation as a cholagogue and alterative, and there is much difference of opinion as to its power over the liver. The practical physician gives a dose of calomel, finds the quantity of bile in the motions greatly increased, and his patient's state much improved; and he argues that the liver has been stimulated by the mercury to an increased secretion of bile, and that to this cause his patient's improvement must be ascribed. The physiologist, on the other hand, ties the common bile-duct in one of the lower animals, produces a fistulous opening into the gall-bladder, and then finds that calomel has no effect on, if it do not diminish, the amount of bile that drains away through the fistula. It may interest some who are present, if I refer briefly to the principal of these experiments.

Kölliker and Müller, in 1855, tried the effects of calomel upon the secretion of bile in a dog with a biliary fistula. The results were somewhat contradictory. Once the bile seemed to be increased, and twice it seemed to be diminished, by the administration of calomel.

Of four experiments made in 1858 on a dog with a biliary fistula, Dr. George Scott found that in all the administration of large doses of calomel was followed by a diminution of fluid bile and of bile solids.

In the same year (1858), Dr. Mosler made similar experiments upon two dogs with biliary fistulæ. The administration of calomel was not followed by any increase of bile, nor could mercury be detected in the biliary secretion.

Ten years later (1868), a committee of the British Medical Association, with Professor Hughes Bennett of Edinburgh as chairman, made a number of similar experiments on dogs, and came to the conclusion that "mercury did not increase the flow of bile, but rather diminished it."

The most recent experiments are those of Dr. Röhrig of Kreuznach, made in the Pathological Institute of Vienna. He found that, although large doses of calomel did seem to increase somewhat the secretion of bile, its power to do so was inferior to that of croton oil, colocynth, jalap, aloes, rhubarb, senna, and sulphate of magnesia, the cholagogue power of these drugs diminishing very much in the order in which they have now been enumerated, and calomel standing at the bottom of the scale.

These results of experiments upon the lower animals have added greatly to the discredit previously thrown upon mercury by its failure, when brought to the test of accurate clinical observation, to absorb plastic lymph in most forms of inflammation; and some eminent physicians are even of opinion that mercury and its preparations ought to be erased from our Pharmacopœia. On the other hand, it has been fairly objected that the results of experiments with mercury upon dogs do not warrant conclusions as to its effects upon man; and, even granting that in man mercury does not increase the quantity of bile secreted by the liver in health, it does not follow that in disease there may not be some condition adverse to the formation of bile, which mercury may have the power of removing. Much, however, of the difference of opinion between the physiologist and the practical physician may be reconciled by keeping in mind the osmotic circulation, as constantly going on between the intestinal contents and the blood. A large part of the bile secreted by the liver and thrown into the bowel is constantly being reabsorbed, to reach the liver again; and accordingly when the common bile-duct is tied and a fistulous opening into the gall-bladder established, the quantity of bile which escapes from the fistulous opening immediately after the operation is much greater than at any time subsequently (Schiff). Mercury and allied purgatives produce bilious stools, by irritating the upper part of the bowel and sweeping on the bile before there is time for its reabsorption. The fact of mercury standing at the bottom of the scale of cholagogues in Röhrig's experiments is accounted for by its surpassing other cholagogues in this property; for, of course, the larger the quantity of bile that is swept down the bowel, the less is reabsorbed and the less escapes from a biliary fistula. That mercury does act especially upon the duodenum, is proved not merely by the large flow of bile which follows its action, but by the fact discovered by Radziejewski, that leucin and tyrosin, which are products of pancreatic digestion, under ordinary circumstances decomposed in the bowel, appear in the fæces after the administration of mercurials. It would appear, then, that mercury, by increasing the elimination of bile, and lessening the amount of bile and of other products of disintegrated albumen circulating with it in the portal blood, is after all a true cholagogue, relieving a loaded liver far more effectually than if it acted merely by stimulating the liver to increased secretion, as was formerly believed, and as some authorities still maintain; for in this case it might be expected to increase, instead of diminish, hepatic congestion. It is not impossible, also, that the irritation of the duodenum by calomel and other purgatives may be reflected to the gall-bladder, and cause it to contract and discharge its contents, and thus account in part for the increased quantity of bile in the stools.

There are also, I think, grounds for believing that, apart from its increasing the discharge of bile from the bowel, mercury exerts a beneficial action in many functional derangements of the liver, in whatever way this is to be explained. Patients of the greatest intelligence suffering from hepatic disorders constantly declare that they derive benefit from occasional or repeated doses of mercurials, which no other medicine or treatment of any sort confers; and the scepticism of the most doubting physician would, I believe, be removed, should he unfortunately find it necessary to test the truth of their statements in his own person. It is not impossible that the good effects of mercury on the liver, and in some forms of inflammation, may be due to its property of promoting disintegration. Mercury appears to have the power of rendering effused fibrin less cohesive, and so more easily removed by absorption, than it otherwise would be. Modern physicians of high standing, and little likely to be accused of credulity as to the beneficial action of drugs, have thought that mercury is useful in croup, by causing a degradation and disintegration of the plastic membrane. If this be so, it seems not improbable that mercury, which from experiments we know to reach the liver, may under certain circumstances act beneficially by promoting, or in some way influencing, the disintegration of albumen. The remarkable effect of mercury on constitutional syphilis probably admits of a similar explanation. But in whatever way it is to be explained, the clinical proofs of the efficacy of mercury in certain derangements of the liver are to my mind overwhelming. I say so the more advisedly, because I was taught to regard mercury as a remedy worse than useless, not only in hepatic diseases, but in syphilis; it cannot, therefore, be said that the convictions forced upon me by experience are the result of preconceived opinions.

Podophyllin is a remedy which seems to act in a very similar manner to mercury. Dr. Anstie's experiments with it on dogs and cats show that it has a special affinity for the small intestines, and especially for the duodenum. So far as my experience goes, it is less certain in its action, and even in moderate doses more likely to cause griping and mucous stools, than the preparations of mercury. It is a good substitute, however, for mercury, when from any cause this is contraindicated.

Colocynth, *Aloes*, *Rhubarb*, *Senna*, and *Jalap*, are also useful aperients in functional derangements of the liver resulting in lithæmia, constipation, or deficient excretion of bile. The experiments of Röhrig seem to show that they actually increase the amount of bile secreted by the liver. *Colchicum* also is an useful adjunct to other aperients in cases of liver derangement with lithæmia. According to Dr. Garrod, it "may often be given with advantage to gouty subjects as a cholagogue in lieu of the preparations of mercury," which, I may add, are often contraindicated in chronic gout with renal disease.

With these remedies we may include *Taraxacum*, which has long been thought to exercise a specific action upon the liver, but which probably acts mainly as a mild aperient. When there is a tendency to constipation, it may be advantageously combined with either alkalies or mineral acids.

4. *Alkalies.*—Next to aperients, alkalies are the most useful drugs in the treatment of functional derangements of the liver. In lithæmia and in many of the symptoms which spring from this morbid state, the greatest benefit is often derived from a course of alkalies—such as the alkaline salts of potash, soda, or lithia, or some of the alkaline mineral waters, such as those of Vals, Vichy, or Ems. The comparative worth of the different alkalies for neutralising acids varies considerably. One grain of carbonate of lithia or of carbonate of ammonia is nearly equal to a grain and a half of carbonate of soda or two grains of carbonate of potash. The beneficial effects of alkalies in derangements of the liver are not due to their neutralising acidity, or to any direct action upon lithic acid. It is, in fact, in the form of lithate of soda that lithic acid is met with in gouty persons. Alkalies seem to do good by combating the pathological state, on which the formation of lithic acid depends. They are believed to promote oxydation, and thus increase the disintegration of albumen. Dr. Bence Jones tells us that in the body as well as out of it alkalies furnish the most marked evidence of assisting in oxydising actions. The experiments of Parkes with liquor potassæ seemed to show that it had the power of increasing the disintegration of the sulphur-holding materials of the body. The effect of its administration was to increase the amount of sulphuric acid and also of urea in the urine; although, with characteristic caution, Parkes adds that the increase of urea as the result of the potash was rendered probable, rather than proved, by his experiments. From experiments on dogs with biliary fistulæ, Nasse was led to the conclusion that carbonate of soda taken with the food diminished greatly the secretion of bile, and a similar result has been observed by Röhrig to follow the introduction of the same salt into the intestine or the veins. The diminution affected the solids as well as the water of the bile, and especially the biliary salts. Nasse also found that after taking two drachms of carbonate of soda the urine (human) was very rich in hippuric acid. The only inference at present to be drawn from these experiments is, that alkalies exert a powerful influence over the chemical changes going on in the liver. When alkalies are employed in lithæmia, it is well to suspend their use occasionally, as they are apt, when long continued, to derange the gastric digestion; but in cases where they are strongly indicated they are better tolerated than is usually thought. In the fifth volume of the Medico-Chirurgical Transactions, Dr. Bostock has recorded the case of a young lady who for months took carbonate of soda to the amount of two ounces and a half daily. The appetite and strength were much improved; and her blood, instead of being thin, coagulated firmly, the coagulum being strongly buffed and cupped.

5. *Chlorine, Iodine, and Bromine* are closely related in their chemical properties, and are believed to promote oxydation in the body by taking hydrogen from water and liberating oxygen. An aqueous solution of chlorine is of service in certain cases of lithæmia associated with general debility; and we know that the various salts of chlorine enter largely into the composition of the mineral waters which are most useful in hepatic derangements. Bromide of potassium will reduce certain enlargements of the liver and spleen, and may be given with advantage in cases of lithæmia associated with congestion of the liver and want of sleep. But among the remedies of this class the chloride of ammonium holds a pre-eminent place. It has obtained a great and well-deserved reputation in India and other tropical countries for the treatment of hepatic congestion; and I have found it of great service in the functional derangement of the liver attended by lithæmia. Given in scruple doses three times a day, it acts as a diaphoretic and diuretic, and exercises a powerful influence in relieving the portal circulation. It is not oxydised, but passes out of the system unchanged in the urine. According to Böcker's experiments, it increases the nitrogenous solids of the

urine; the mean daily increase of urea under its use he found to be not less than seventy-four grains—a quantity indicating a vast augmentation either of metamorphosis or of elimination, but from its beneficial effect on the liver, most probably of the former. Chloride of ammonium has this advantage, that it may be combined with either alkalies or mineral acids.

6. *Mineral Acids* are employed by many physicians in the treatment of functional derangements of the liver. Nitric acid especially has long been thought to have the power of augmenting the flow of bile; but there is no good evidence of this, either clinical or experimental. According to my experience, the action of mineral acids upon the liver is much less direct than that of alkalies. In all morbid states of the liver attended by congestion, and in most cases of lithæmia, I have found that they either did no good or they aggravated the symptoms. They may, however, be of service when there is debility and want of tone; but the chief good which they effect is probably that of improving the gastric digestion. In some cases, both acids and alkalies may be given advantageously—the alkalies before, and the acids after, a meal.

7. *Tonics.*—Clinical experience shows that, notwithstanding the existence of debility and anæmia, tonic remedies are apt to disagree in many cases of functional derangement of the liver. This remark applies especially to the functional derangement resulting in lithæmia. I have repeatedly known patients in this state improve at once on substituting for quinine, iron, the mineral acids, and stimulants, abstinence from alcohol, with aperients, blue pill, and alkalies, and careful regulation of diet; the strength, flesh, and colour returning under what at first sight might have appeared a lowering treatment. Different opinions have been expressed with regard to the utility of iron in chronic gout. According to Dr. Bence Jones, iron is one of the two potent remedies we possess for indirectly promoting oxydation in gout as well as in other maladies; whereas, in Dr. Garrod's opinion, the preparations of iron are very likely, when indiscriminately given to gouty subjects, to excite a paroxysm of the disease, and for the most part are contraindicated. My experience coincides with that of Dr. Garrod; and in simple lithæmia I have constantly known iron to increase the tendency to deposits of lithates in the urine, constipate the bowels, and aggravate any symptoms from which the patient may have previously suffered. As a rule, also, I have found that patients with chronic gout or with lithæmia do not tolerate even small doses of quinine. From some careful experiments made by Dr. Ranke of Munich, quinine appears to have the power of diminishing the amount of lithic acid in the urine. The experiments were made on three persons, and the results were uniform. The effect continued for about two days after a single dose of twenty grains; and there was no evidence of any increased excretion after the effect of the quinine had passed off, so that probably the quinine acted by lessening the formation of lithic acid in the liver, or by substituting some other substance for it. From these experiments it might be inferred that quinine and bark should be of essential service in chronic gout and in lithæmia, but this inference is opposed to clinical experience.

When tonics are given in lithæmia, gentian, chiretta, cascarilla, and serpentaria are preferable to quinine and other preparations of bark. The best preparations of iron are the reduced iron, the citrate of iron, or the tartrate of iron and potash; these preparations are sometimes advantageously combined with alkalies and saline aperients. In cases of lithæmia attended by great nervous prostration, I have seen advantage follow the use of phosphorus in doses of one-thirtieth of a grain three times a day. The lithates have disappeared from the urine, and all the symptoms have improved. In some of these cases the circumstances seemed to leave no doubt that the improvement was due to the phosphorus.

8. *Opium* and its preparations are contraindicated in most functional derangements of the liver, and particularly when there is evidence of lithæmia. Opium impedes elimination both by the bowels and kidneys, and also appears to check the disintegrative processes which go on in the liver. It is generally believed to diminish the amount of bile secreted by the liver; and this view is favoured by the light-coloured stools which often follow its use. The result, however, of Röhrig's experiments on animals with biliary fistulæ was to show that opium increased the secretion of bile instead of diminishing it, so that probably the

discharge of bile from the liver is only temporarily suspended by a similar influence on the coats of the bile-ducts to that which opium exerts on the coats of the bowel. Be this as it may, there can be no doubt that opium constipates the bowels, favours portal congestion, and checks the elimination, not only of bile, but of the products of disintegration which go on in the liver. The experiments of Böcker and clinical experience alike show that opium impedes the elimination of the nitrogenous solids of the urine, and that dangerous and even fatal consequences ensue from its employment in structural diseases of the kidneys. These considerations explain why, in hepatic derangement attended by lithæmia, opium is contraindicated for the relief of pain, sleeplessness, or other symptoms for which it is commonly prescribed.

On the other hand, in the functional derangement of the liver which exists in diabetes opium is tolerated in large doses, and is often of signal service in checking the formation of sugar. Its good effect is probably in great measure due to some influence on the vaso-motor nerves of the hepatic vessels, a reflex paralysis of which we have found to be one of the causes of diabetes.—*British Med. Journal, May* 2, 1874, *p.* 568.

35.—SOME POINTS IN THE DIETETIC TREATMENT OF DISEASE.

By Dr. E. A. Parkes, F.R.S.

While making some experiments on soldiers at Netley with different kinds of food I have come across some facts which may be of interest in a practical point of view, or will at any rate elicit the views of members of the Society on the subject of diet in disease.

1. The first point is *the production of dyspepsia and its relief by diet.*

I was at one time experimenting on two men with a diet of dried meat and bread, no vegetables and no fats being given. The object was to see if soldiers could be kept in health on such a diet for two or three weeks, as in that case a man would be able to carry almost enough food to last him, it may be, all the time of a rapid expedition, such as the march to Coomassie; at any rate, the amount of waggon transport required would be greatly lessened. The meat was good and was merely dried, so that it contained only 10 or 12 per cent. of water instead of 70; the bread was good and of the ordinary kind. In both men this diet produced in two or three days very great indigestion and depression of spirits, and in both an eruption of little pimples, like acne, came out on the face and shoulders. In both cases the dyspeptic symptoms and the little eruption were at once removed, not by omitting the dried meat, but by adding starches and butter to the same diet. The illness produced by the one kind of food, and the immediate cure which followed the addition of alimentary principles previously deficient, seemed to me very important in connexion with dieting in disease, and especially in fevers, where often such quantities of animal broths are given, and, with the exception perhaps of a little arrowroot, no starches and no fats are ordered.

The relief to the dyspepsia of these two men by adding starches and fats was shown in another case.

An inventor sent to the War Office a dried food composed of meat, flour, potatoes, some other vegetables, and salt. It was supposed to contain all the essentials of a good diet, and it was thought that twelve or thirteen ounces would be a sufficient ration for a day, and that a soldier could carry enough for twelve days. Many foods of this kind have been proposed, and they have almost all failed on trial, owing, I believe, chiefly to their being too highly dried. In the experiment I now refer to this food produced in two or three days the most violent dyspepsia, and made the man feel so uncomfortable and depressed that he declared he would rather starve than eat it. I therefore left it off altogether, and put him on a diet composed of arrowroot and butter deprived of all casein, and gave him no salt. The effect of this was perfectly marvellous: all symptoms of dyspepsia disappeared in twenty-four hours; the man at once recovered his spirits, and it was quite clear that the irritative condition produced by the concentrated food had been at once removed.

The treatment of "irritable gastric dyspepsia" by mild farinaceous and vegetable food is well known, but the rapidity of cure of these cases seems to me to show that the best way would be not to give vegetables at all, or any nitrogenous food, but for two or three days to let only starches and fats in some digestible form, and without salt, enter the stomach. I found these men could take from two to three ounces of butter in the shape of arrowroot biscuits, and also spread upon these biscuits, without producing any of the dreaded "bilious" effects usually attributed to fatty foods.

In reference to the little papular eruption produced in two persons by a diet too largely composed of meat, I think some interest attaches to a fact of an opposite kind. In 1867, Dr. Passavant, of Frankfort, published an interesting paper (Archiv der Heilkunde, 1867, p. 251) on the treatment of non-syphilitic psoriasis inveterata by means of a meat diet. He had himself suffered for twenty-five years from psoriasis, and had vainly tried every possible remedy. He was cured at last and completely by a meat diet; that is, by Bantingism, but without the alcohol allowed in that system. A case of eczema squamosum was also cured by this diet.

Just after I read this I was asked to see a case of most inveterate psoriasis, in consultation. I found every remedy I suggested had been tried. At last, in despair, I mentioned Dr. Passavant's observation, and it was agreed to try the meat diet without any medicine. The patient rapidly recovered. I have had no other case since in which it could be tried, and I mention the fact chiefly to know if the plan has been used by others, partly because in my two cases of papular eruption the meat diet also appeared to have a special influence on the skin, though it was in the contrary way—viz., it produced instead of cured a disease.

2. The next point I wish to bring before the Society are some other effects of a non-nitrogenous diet.

I have noticed two conditions to be produced by a purely non-nitrogenous diet, which may be useful in the treatment of disease.

Such a diet lessens in a very great degree the acidity of the urine. We know that the free urinary acidity is usually attempted to be lessened in two ways: first, by giving alkaline medicines or drugs which become alkaline in the body, as the acetates or citrates; and, secondly, by giving fresh fruits and vegetables, which contain similar salts. Now, in both these plans, it has appeared to me that the acid is merely neutralised, and that its formation is not prevented. On the contrary, I have formerly given some evidence to show that the taking of alkalies may really increase the acid-building processes in the body. What these two plans do, I take it, is to neutralise a urine unduly acid, and thereby render it less irritating to the urinary surfaces; and this is a great service, only that it is not all that is sometimes required.

A non-nitrogenous and non-saline diet lessens the formation of acid, as the following facts will show:—

The normal amount of free acidity in the urine is usually expressed, as proposed by Julius Vogel, as equal to so much crystallised oxalic acid; the normal daily average amount of free acidity in the urine of healthy men is equal to the acidity of from two to four grammes of crystallised oxalic acid.

I kept a healthy man on ordinary meat diet for fourteen days. The mean free acidity was equal to 2·749 grammes of oxalic acid in twenty-four hours; the highest amount on any one day was 3·369 and the lowest 2·122 grammes. I then put him on a diet entirely non-nitrogenous, and very nearly non-saline. On the first day the free acidity of the twenty-four hours' urine sank to 1·847 grammes, and on the second day to 1·255 grammes, or less than one-half the average.

I kept another man on ordinary diet for twelve days; the mean daily acidity was equal to 3·406 grammes of crystallised oxalic acid. He was then put on a non-nitrogenous diet for four days; the mean daily acidity of these four days was only equal to ·873 gramme of oxalic acid, or one-fourth the normal amount; on the third day it was only ·618 gramme, or one-sixth the normal amount. He then returned to meat diet, and subsequently was placed again for five days on non-nitrogenous, and non-saline food. On the first three days the mean acidity was only ·509 gramme in each twenty-four hours; on the fourth day the amount was only ·0368 gramme, and on part of the day the urine was alkaline; on the fifth day the acidity was only ·444 gramme, or one-eighth the normal amount.

I notice also, in Dr. Pavy's excellent book on Food, that Mr. Mahomed in some experiments on a non-nitrogenous diet found his urine became alkaline.

Now to ensure this diminution of acidity there must be more than a mere farinaceous and milk diet; at least I found a man who took only oatmeal and milk had a free acidity equal to 3·022 grammes of oxalic acid on an average of many days. To produce the effect the diet must be non-nitrogenous, perhaps non-saline. This diet also increases the flow of urine, so that I am sure it must be found useful in gravel and uric-acid deposits generally.

I was curious to know whether when a man was on this non-nitrogenous diet he would pass any uric acid; the quantity of urea daily excreted was of course greatly lessened, and so was the uric acid, but even after three or four days of non-nitrogenous diet I could still always find a little uric acid in the urine. This seemed to me an argument against the origin of urea from uric acid; for why, when all nitrogen was cut off, and consequently the oxygen must have been in relative excess, should not all the uric acid have been converted into urea if that is its usual origin in the body? It was not so converted however, but passed out *pari passu* with the urea as if furnished by special cells. At any rate we may be sure we cannot entirely exclude uric acid by a non-nitrogenous diet, though we can greatly lessen its amount.

The second effect produced by non-nitrogenous diet is a great lessening of the power of the heart, which is perceptible twenty-four hours after the commencement of the diet. The heart beats more feebly, the pulse is smaller and softer, and if the sphygmograph is used, the height of the up-stroke is only half of what it is in the normal state of the man. This action on the heart is so marked that it should make us watch the effect of a non-nitrogenous diet. It may be useful, I think, in two cases—first, when we wish to reduce the action of a powerfully acting and excited heart, and, secondly, in the treatment of aneurisms. The treatment of Valsalva by rest, bloodletting, and low diet, has been revived in a better form by Tufnell, who has met with great success. Perhaps the use from time to time of a perfectly non-nitrogenous diet, in addition to rest, might aid in lessening the force of the heart, and therefore increasing the tendency to coagulation in the sac.

The mode in which I gave the non-nitrogenous diet was as follows:—Butter was melted in a jug placed in a water-bath, and the liquid oil was poured off. Arrowroot cakes were made with a portion of this butter, and a little sugar was added. A good cook can thus make very agreeable cakes, which should not be in the least tough. These arrowroot cakes were eaten by my patients with great relish when buttered; they also took arrowroot jelly sweetened.

The healthy men on whom I experimented ate as much of this food as they liked; they took on an average ten ounces of arrowroot, six ounces of sugar, and two ounces and one-third of butter, in each twenty-four hours. This quite satisfied hunger, and maintained weight; and all four men on whom I made these trials liked this diet, and felt perfectly well on it. The longest time I kept a man on it was five days, and he did a hard day's work on the fifth day.

If it is wished to add a little nitrogen to suit a diet, but not to give meat or bread, it is best done by substituting ground rice for some of the arrowroot and sugar; one ounce of rice contains three grains and a half of nitrogen. If more nitrogen is desired, then it may be given in the form of eggs (yelk and white); an egg of two ounces in weight contains nine grains and one-third of nitrogen.

The influence of this diet of arrowroot and butter oil on the free acidity of the urine is very interesting. It shows us that something still remains to be solved, even after the important observations of Bence Jones, William Roberts, and J. Vogel. It is clear that the free acidity of the urine is unconnected with the changes in the body of the starchy and oleaginous aliments. The lactic acid formed by the one does not, we know, appear in the urine, and the fatty acids coming from the other appear also to have no effect.

Some part in the diminution of the urinary acidity must be attributed to the absence of the phosphates which enter so largely into the meat, milk, and cereal diets, and which, by their peculiar properties, play so large a part in giving acidity to the urine. Could the want of chloride of sodium have had any effect in this way? Of this I am not clear, but as the hydrochloric acid of the gastric juice is no doubt derived from common salt, and as in this diet there must be a great lessening in the amount of hydrochloric acid poured out in the stomach, I am disposed to think the rapid disappearance of irritable gastric dyspepsia may be in part connected with the want of salt in the diet.

The absence of nitrogenous aliment would necessarily check the formation of uric and hippuric acids, and thus also lessen the acidity of the urine. Whether the absence of the phosphates (which, passing in neutral, pass out acid) and the non-formation of uric and hippuric acids will explain all the diminution in the free acidity of the urine, or whether other acids are ordinarily formed in the metamorphoses of the nitrogenous tissues, which are not formed on a non-nitrogenous diet, is a point on which it is at present hazardous to express an opinion.

What is the influence of alcohol on appetite and digestion?

Few more important questions could be asked by men concerned in the treatment of disease, but so difficult is the answer that no writer I know of treats it fully.

It is, I believe, generally admitted that in large doses alcohol lessens, and at length destroys, appetite. It is very desirable to know if this is the case, and, if so, what is the quantity which will thus act in healthy men. I have made some observations on this point, which I will now give.

A healthy man took, on successive days, one, two, and four fluid ounces of absolute alcohol in divided doses with water and food. The first two quantities did not lessen appetite, but, according to the man's statement, increased it. Four fluid ounces, however, greatly lessened appetite; and on increasing the quantity to six and eight fluid ounces appetite was entirely destroyed, and the man could eat nothing. These experiments showed that in this healthy man something between two and four fluid ounces of alcohol in twenty-four hours lessened appetite.

Another man took, on successive days, in one dose and before food, one, two, four, six, and then again six fluid ounces of undiluted brandy, containing about 50 per cent. of absolute alcohol. The one and two fluid ounces of brandy (equal to half an ounce and one ounce of absolute alcohol) had no perceptible effect on appetite one way or other; four ounces of brandy (equal to two fluid ounces of absolute alcohol) greatly lessened it; and six ounces of brandy (equal to three ounces of alcohol) destroyed it, so that the man could not force himself to eat all his food, though strongly urged and indeed anxious to do so. In this case the brandy was given three hours after breakfast and three before dinner.

To another healthy man six ounces of undiluted brandy were given on three days, three hours before food; and on three alternate days he took no brandy. The brandy contained 36 per cent. of alcohol by volume, and therefore the six fluid ounces contained a little over two fluid ounces of absolute alcohol. In this experiment the man was kept without food every day from 6 p.m. until 1 p.m. the next day, or for nineteen hours; he took the brandy therefore after sixteen hours' fasting. On the days when he took no brandy his appetite was excellent. On the brandy days, although he felt excessively hungry before he took the brandy, he lost all sensation of hunger soon after it: in spite of the urging he could not take all his food even after this long fast.

It seems, then, that alcoholic beverages containing about two fluid ounces of alcohol produced marked lessening of appetite in both those men who took the brandy on an empty stomach; and in the first man, who took the alcohol with food, something more than two ounces was required to produce this effect.

In a fourth healthy man twelve ounces of brandy taken in divided doses during the day, and chiefly with food, did not affect appetite, but the man informed me that he was himself well aware that a large quantity would do so, as he had often made the experiment on himself.

These observations may be considered in the light of fairly exact experiments on men whose digestion was perfect and who were quite healthy. In no case were the men prompted, nor did they know whether I expected that the appetite would be increased or lessened. Three of them thought the appetite would be increased; the fourth knew, from previous experience, that spirit-drinking largely destroyed appetite. I believe it may be safely concluded that anything over two fluid ounces of alcohol may lessen appetite if the stomach be empty, and therefore necessarily injures digestion.

The observations I have myself made on this point on cases of disease are, I am sorry to say, fragmentary. I have seen some patients who were having large quantities of alcohol and who complained that they could eat nothing, and on lessening or taking away alcohol the appetite has returned. In such cases I cannot but conclude that alcohol was acting hurtfully; for surely, in most cases of disease, one great object is to get nourishment of the ordinary kind into the system. But there are other cases in which men have taken considerable quantities of spirits and yet could eat well. I think the time when the spirit is taken may make the difference. In my healthy men the greatest injurious effect on appetite was produced when the alcohol was taken on an empty stomach, and the least when it was taken with food.

The injurious effects of such doses of alcohol will, I believe, be admitted; but now let me turn to the other side.

If alcohol in large quantities lessens, and eventually destroys, appetite, do small quantities increase it? Let me test this first by healthy men.

The man whose appetite was nearly destroyed by four fluid ounces of alcohol thought that one and two ounces increased his appetite. The man whose appetite was destroyed by four fluid ounces of brandy did not think that one and two ounces had any effect either way. He was, indeed, disappointed with the effect of one ounce of brandy, as, after abstinence for many days, he had been looking anxiously for it, and thought he should enjoy his dinner more. In this case, then, half an ounce of pure alcohol had no effect; and, subsequently, one ounce of pure alcohol was not more potent in increasing appetite in this man. Would smaller quantities have been more useful? To this I can give no answer from experiment. In the case of the man whose appetite was not lessened by twelve ounces of brandy given in divided doses, there was no increase. In the fourth man the brandy was given in too large doses to test this point.

The evidence from these three healthy men as to any increase of appetite and more vigorous digestion from small doses of alcohol is therefore uncertain, and it is more negative than positive.

Turning, however, from these experiments to the general opinion derived from talking with patients and friends, my own experience is this:—Both healthy men and patients have told me that appetite has been really increased by taking spirits, wine, or beer, in small quantities with food.

I have two observations on this point which seem to be really exact. A relative of my own, and a man of singularly good judgment and honest mind, was a total abstainer for many years. When he was between fifty and sixty years of age he got out of health; his digestion became feeble; he ate less, and began to get thinner. He was advised to take one-half to one pint of beer with dinner. He did so unwillingly, but found to his surprise that he ate more, digested better, and soon recovered all his lost ground. He has continued taking beer once a day and occasionally one or two glasses of wine ever since. He is now seventy years of age, very healthy, and has no doubt that he has been greatly benefited by this alteration in diet.

The other case is even stronger, and will be interesting to all, because it occurred to my friend Dr. Carpenter, who has done more than any man living perhaps to advocate temperance. In his writings on this subject, Dr. Carpenter has always maintained that the action of alcohol on the human body when under par is different from its action on an individual in full health, and is beneficial in many cases with depressed digestive power. He has been so kind as to give me an account of his own case, and to allow me to quote it. He writes to me thus: "After having been a water drinker during all the earlier part of my life, and enjoying a fair measure of health and vigour, I broke down about ten years ago under the pressure of excessive work, and, besides a local disorder, I then suffered from a total loss of appetite and enfeeblement of the digestive power, so that my whole system was undergoing a rapid lowering. My medical friends recommended me powerful tonics, combined with three glasses of sherry daily, and on this regimen I improved even more rapidly than they expected, and was able in a month's time to enjoy a tolerable dinner, gradually reducing the quantity of wine I took with it. They had at first expected that I should be obliged to winter in the south of Europe; but I rallied so fast that this idea was soon abandoned, and I was able to return to my work after a three months' absence. Ever since that time I have taken a couple of glasses of light claret with my dinner, and this fluid suits me very well. I often reach home very tired, and feeling as if I could eat nothing, and I am certain that without this little 'fillip' I should eat nothing. The question lies, therefore, in such cases between the use of the slight alcoholic stimulus and the inadequate nutrition of the body, and I cannot myself doubt which is the *least* of what I am willing to admit to be *two evils.*"

Coming from such a man, this evidence seems to me indisputable, and, coupled with that derived from watching patients with weak digestions, I think may be called conclusive.

Then come the questions, What amount of alcohol increases appetite, when should it be given, and in what form?

With regard to the *amount*, I should say that, if I may judge from my own experience on healthy men and on patients, the quantity which should be given for this particular purpose of increasing appetite should not exceed one fluid ounce of absolute alcohol in a day, and I think half an ounce is often enough. If this does not improve appetite, a larger quantity will not do so. I am quite sure we cannot force appetite by increasing the amount of alcohol, but, on the contrary, shall run the risk of lessening it. Alcohol has sometimes to be given in large quantities to urge on a failing heart or to blunt sensation; but this is another thing. In such cases a paramount necessity compels us to disregard the question of appetite. But when, as in most cases, our object is to get more nourishment into the body, then we should keep, I believe, to small doses, and if the medicine fails, try something else. I must add to this, however, by affirming what I am quite sure of by observation, that there are persons whose appetites and digestions are injured by even small quantities of alcohol, and who digest much more and eat much more when water only is taken. The healthy digestion of children is, I think, always injured.

As to the *time* when it should be given, I have no doubt it must be with food. The reason of this is tolerably clear. The alcohol is mixed with the contents of the stomach, acts, therefore, in a very diluted form upon the mucous membrane, and is absorbed slowly. We may, therefore, safely infer that the excessive redness and dilatation of vessels, which a tolerably strong alcoholic solution causes in living tissues, is avoided; there is probably a moderate paralysis of the vaso-motor nerves and a more rapid circulation and pouring out of gastric juice. But give it without food or in such large quantities even with food as to impart to the fluids bathing the delicate cells and tubes of the stomach a more concentrated alcoholic composition, and we can believe that the albuminous tissues are damaged, and the nerves and vessels are probably paralysed to an extent which interferes with the formation and pouring out of the gastric juice. If this be so—and I believe the facts indicate it—what madness it is for men to be drinking at all times of the day, especially spirits and strong wines, which must inevitably ruin in the long run the surfaces they bathe and the tissues they pass through in a comparatively concentrated state.

With regard to the *form* in which alcohol is given to promote appetite, I think if a fattening effect is also desired, and no gouty tendencies exist, beer containing a good deal of malt extract is the most suitable; if salines and acids seem to be desirable for the kidneys, then the light French wines seem a good form, though many persons of weak digestion are unable to tolerate the quantity of acid and acid salts most of these wines contain. In certain cases the stronger astringent wines may evidently be best, and in all cases, no doubt, a natural wine, as little doctored as possible, and free from the chance of other alcohols or of fusel oils, should be ensured. But I confess I am quite unable to know on what grounds such minute distinctions are so often made in recommending wines—why one should be proscribed, and the other prescribed, although practically the same. Purity, alcoholic strength, and the amount of free acidity, salts, and extract, are surely the most important points to guide us in prescriptions, for the ethers are in too small a quantity to have much effect on digestion, though the aroma and bouquet they aid in giving may be pleasant.

For many patients, when the effect of alcohol on digestion only is sought, I think by far the best plan is to follow the plan recommended by Wilks, and to give rectified spirits, properly disguised, as a medicine; we shall then be certain of purity, that proper quantities are given, and at the time we desire; that no discretion is left to nurses or friends, and that the chances of a bad habit being formed are less.

I have confined myself in these remarks to one of the actions of alcohol, the importance of a correct knowledge of which can scarcely be overrated. I have not desired to enter into the question of the action of alcohol on the heart, nervous system, or other parts, but simply to commence a discussion on this one theme—viz., the influence of alcohol on appetite and digestion, and the consequent nourishment of the body.—*Lancet*, *May* 23 and 30, 1874, *pp.* 722, 758.

36.—THE TREATMENT OF ROUND WORM.

By Dr. Thomas E. Clark, Clifton.

A peculiar case came under my care as an out-patient at the Bristol General Hospital in February last. The patient, a child aged one year and eight months, had been suffering for three weeks with a very irritable state of the bowels, so much so that it could not be kept clean; and during an evacuation a round worm was passed. The child looked pale and ill; it had been fed with the ordinary diet of the house and pork. A mixture of a grain of santonine and syrup was ordered to be taken three times a day. On the next visit (four days), the child had voided forty-six round worms. It seemed more cheerful, and was to continue the mixture. At the next visit, fifteen more had passed, making in all sixty-two worms.—*British Medical Journal*, *May* 30, 1874, *p.* 707.

37.—ON THE ACTION OF PURGATIVE MEDICINES.

By Dr. T. Lauder Brunton, Casualty Physician and Lecturer on Materia Medica at St. Bartholomew's Hospital.

[A matter of great importance with reference to this subject is the effect of purgatives upon the secretions which are poured into the intestinal tube by the various glands which are connected with it.]

The saliva which flows into the mouth from the submaxillary and parotid glands is swallowed and aids the digestion of starchy food in the stomach, and probably the intestine. A part of its active principle, ptyalin, is reabsorbed, and some of it is excreted in the urine; but as we shall here afterwards see, it is probable that another part is excreted again by the salivary glands and thus does its work twice over. This is at present only a probability as regards ptyalin, but it is a certainty in the case of several substances which are excreted by the salivary glands, such as iodide of potassium, for example, which can be detected with great ease. When this substance is swallowed, it is absorbed from the stomach, passes in the blood to the salivary glands, and is excreted by them much more readily than by the kidneys. It again passes down with the saliva to the stomach, is reabsorbed, and again excreted. Thus it may go round and round for a long time without getting entirely out of the body. If we wish to remove it quickly and completely, we must give a purgative so as to prevent its reabsorption from the intestinal canal by causing its speedy expulsion. The same is the case with other iodides, such as those of lead or iron. Iodine has been shown by Bernard to possess the power of making iron pass readily through the salivary glands, the iodide of iron being found in the saliva soon after it has been injected into the blood, while other salts of iron, such as lactate, never make their appearance in it at all. Several years ago iodide of potassium was proposed by MM. Guillot and Melsens as a remedy in cases of lead-poisoning. The lead, they consider, is present in the body in the form of an insoluble compound which it makes with the tissues, but by the administration of iodide of potassium it is rendered soluble. It then finds its way into the circulation, and is excreted by the kidneys and other emunctories. But the iodide of lead is partly excreted by the salivary glands, for M. Malherbe, of Nantes, and Dr. Sieveking have found it in the saliva of persons suffering from lead-poisoning, and who were being treated by iodide of potassium. The lead salt being swallowed with the saliva, is again reabsorbed, and thus the cure is comparatively slow when patients are treated with iodide of potassium alone. I frequently see patients suffering from lead-poisoning brought on by working in white lead, and for some time I have been accustomed to treat them with five grains of iodide of potassium, three times a day, and a sufficient quantity of sulphate of magnesia or other purgative either thrice or once a day, to keep the bowels very freely open, and cause the expulsion of the lead from the alimentary canal as quickly as it is secreted into it. I have not made comparative experiments on the effect of this treatment and of that by iodide of potassium alone, or by purgatives alone, but from what I remember of cases treated by the late Professor Syme with castor-oil, I am fully satisfied with the treatment I now adopt. The same plan would probably prove equally useful in chronic poisoning by copper or mercury.

But the gastro-salivary circle, as we may term it, from stomach to salivary glands and from salivary glands to stomach again, is not the only one in which those metals move. Their circulation in the portal system, or entero-hepatic, as it is termed by Lussana, is still more important. Iron is eliminated in great part by the bile: copper and manganese appear in it also, according to Albini and Moser, and it seems probable that manganese, lead, and all the heavy metals pass out of the body by this channel. From the liver they pass into the intestine, are reabsorbed from it, and again pass to the liver and recommence their course. They may be present in considerable quantities in the blood of the portal system without reaching the general circulation or getting a chance of passing out in the urine. They are therefore much more closely locked up in the entero-hepatic circulation than in the gastro-salivary one, for the salivary glands are supplied by the systemic circulation, and any blood which brings lead or any other substance to them must also carry it to the kidneys. The power of the entero-hepatic circulation to retain metals within the body being much greater than that of the gastro-salivary one, it is evident that the beneficial effects of purgatives in lead-poisoning are due to their removing the metal from the portal circulation still more than their action on the gastro-salivary one which has already been discussed. Other poisons, such as curare and probably serpent's venom, may also circulate in considerable quantity in the portal system without reaching the systemic circulation, and probably this is one of the causes, though by no means the only one, which renders these substances to a great extent innocuous when swallowed.

But the circulation of iron, lead, curare, &c., in the portal system, important though it may be, is of far less interest than the circulation of the bile itself. For the sake of convenience I have merely stated that lead, mercury, &c., are excreted in the bile, and have hitherto assumed that bile circulates in a similar way in the portal system, without giving any reason for doing so.

It used to be thought by many that bile was formed in various parts of the body, and was simply excreted by the liver. This view is now given up by most physiologists, who believe that bile is formed by the liver only. But in altering their views regarding the function of this organ they went too far, and supposed that it only formed bile, which, when it had once found its way into the intestine and mixed with the intestinal contents, became decomposed and finally expelled with the fæces. A year or two ago, however, Schiff found that this view of the hepatic functions was too limited, and that the liver removed bile from the blood or *excreted* it as well as formed or *secreted* it. He observed that when all the bile was drawn away from the liver by means of a fistulous opening in the gall-bladder after ligature of the ductus choledochus, the quantity which flowed from the liver rapidly diminished after the fistula had been established, but could again be quickly increased by the simple process of putting bile into the duodenum. The bile was at once absorbed and again excreted by the liver, and it did not make much difference whether the bile just removed from the fistula in a dog was again injected into its duodenum, or whether ox bile was used instead. In the normal state of the animal the liver is always doing two things: it is *forming* new bile, and it is *excreting* old bile which it has received from the intestine by means of the portal vessels. When a biliary fistula is made and the bile is drawn away as fast as it is secreted, none gets into the intestines, and therefore no old bile reaches the liver; consequently, the quantity collected represents only the new bile formed in the liver, and is of course much less than that which would normally pass through the ductus choledochus into the intestine. If all the bile were absorbed there would be no need for the liver to go on forming it, but this is not the case, for only a part of it is reabsorbed, and the remainder is decomposed and excreted with the fæces.

So long as the liver does its duty properly, and excretes again all the bile which is absorbed by the portal blood from the intestine, very little bile can pass through the organ into the vena cava and thence into the general circulation. But whenever so much bile is taken up from the intestines that the liver cannot excrete it all, it will find its way out of the portal into the systemic circulation, and will exert an injurious action on the nervous system. The same effect will follow anything which diminishes the excreting power of the liver and renders it unable to excrete the normal amount. It is evident that if any thing should cause the liver to form more bile than usual at any time, it will have extra work to do in the way of excreting it after its absorption, and there will be more bile circulating in the portal blood for some time afterwards, or at any rate until the extra quantity has been got rid of or compensation has been established by the liver forming less. Many experiments have shown that an abundant supply of food causes the liver to form more bile, and we all know that heavy dinners are apt to cause biliousness. Fasting, on the other hand, diminishes the quantity of bile secreted, and every one knows that if he fasts for a day after taking an especially heavy dinner he may be none the worse for it, but if he dines out every night he is almost sure to become bilious unless he takes measures to prevent it by using purgatives.

It has not yet been shown by direct experiment that the symptoms usually grouped under the head of "biliousness" are due to the presence of an excess of bile in the blood; but the rapidity with which they disappear after the removal of bile from the system, either by vomiting or purgation, renders it extremely probable. Frequently we find that the fit of vomiting which has expelled a quantity of bile is hardly over when the appetite returns, the brownish-white fur disappears from the tongue, the face loses its dingy hue, the languor disappears, the irritability of temper is replaced by equanimity, and stupidity and laziness give place to sprightliness and activity. But vomiting is a disagreeable process, and few submit willingly to it, although it would be well worth while if the same ends could be gained by no other means. As most old practitioners have found, however, a mercurial pill and a saline purgative produce all the good effects of vomiting without its trouble and discomfort, and they have long been in the habit of ascribing the beneficial action of the mercury to its "cholagogue" properties. They felt convinced that biliousness was due to bile in the blood, and believed that its removal was due to the liver being stimulated by the mercury to excrete the bile more rapidly. But the careful experiments made by the Edinburgh Committee of the British Association on dogs with biliary fistula showed that neither mercurials nor other purgatives increased the flow of bile from the liver, and these results seemed at first sight to contradict the views entertained by most practitioners regarding their cholagogue action. The contradiction is apparent, but not real, for in the experiments the bile was regularly removed from the body as soon as it was formed, and none of it ever reached the intestine. Consequently, any diminution in the quantity collected simply showed that the liver was forming less. Other experiments have given somewhat different results from those of the Edinburgh Committee, and Röhrig has found that the administration of purgatives, as well as other measures which increase the circulation in the portal system, augment the formation of bile. The important question in regard to the treatment of biliousness, however, is not whether the liver forms more or less new bile, but whether the bile already circulating in the blood is removed from it. The liver may be doing its best to effect this purpose, but it will not succeed if the bile it removes from the portal blood is again absorbed as quickly as it is poured into the intestine. But if the peristaltic action of the whole intestinal canal is quickened by a purgative, the bile will be hurried rapidly onwards and evacuated before there has been time for its reabsorption, and the liver being thus relieved will be able to excrete any bile still remaining in the blood. This result will not be effected by any purgative acting on the large intestine alone, for a considerable part of the bile will in all probability have been absorbed before it gets so far; but any simple purgative or mixture of purgatives which stimulates the duodenum and small intestine as well as the large one will prove most effectual. Now, the green colour which the fæces present after the administration of mercurials, and which is so distinctive that the name of "calomel stools" has been applied to them, has long been regarded as an evidence of bile and appealed to as a proof of the cholagogue action of these remedies. The opponents of this doctrine have declared that the colour was simply caused by the presence of black sulphide of mercury, just as a somewhat similar colour may be occasioned by the presence of a small quantity of sulphide of iron after the administration of mild ferruginous preparations. Their statement has been disproved by Buchheim, who has shown that the colour is really due to bile, and thus established the fact that calomel induces its expulsion from the intestine. It may therefore well be called a cholagogue, and it is evident from what has already been said that it must diminish the quantity circulating in the blood, whatever its effect may be on the amount formed by the liver.

[The following is a short *resumé* of the chief points in this paper.]

Purgatives act by stimulating the secretion of fluid from the intestines, as well as by increasing peristaltic action. They prove useful in many ways. They hurry the food out of the alimentary canal, and thus lessen the injurious effects of over-eating. By expelling irritating substances from the intestine they arrest diarrhœa, and remove headache and other pains, caused either by the abdominal irritation or by the absorption of poisonous matters produced by imperfect digestion and decomposition of food. They relieve biliousness by removing bile, and are most efficient aids in the treatment of chronic poisoning by lead, mercury, or other metals. It is probable that pepsin and pancreatic ferment are absorbed from the intestine and circulate in the blood, where the latter assists in the production of animal heat. They are then secreted anew by the stomach and pancreas, and do their work again. Purgatives lessen their quantity as well as that of the bile; they may thus be useful in fevers, but they injure old and feeble persons, both by diminishing their calorific power and impairing their digestion. They relieve inflammation by lowering the blood-pressure and thus diminishing congestion; and they prove beneficial in dropsies, both by abstracting water from the blood and diminishing congestion in the kidneys.—*Practitioner*, *June* 1874, *p.* 403.

DISEASES OF THE URINARY ORGANS.

33.—ON THE ESTIMATION OF THE NITROGENOUS CONTENTS OF URINE.

By Professor EMERSON REYNOLDS.

In examining urine it is generally considered sufficient to estimate the highly nitrogenised urea and uric acid in order to determine the nitrogen excreted in a given time, since these bodies are commonly regarded as the principal product of the waste of nitrogenised tissue. Such a mode of measuring the nitrogen excreted by the kidneys in health is probably near enough to the truth for practical purposes; but we have good reason to believe that it is not by any means a true measure under diseased conditions; moreover, it is imperfect, because the existing method of estimating uric acid is, in my experience, quite untrustworthy, though error in this direction is perhaps of little moment when the proportion of the acid present is very small. In view of these considerations I have long felt that the *total* nitrogen in urine must be directly determined if we desire to obtain a true measure of its [excretion by the kidneys under diseased conditions of the body. Assuming that we find, with the aid of Liebig's well-known volumetric process, the proportion of urea present in a specimen of urine, we can easily calculate the amount of nitrogen present in that urea. If now we possess the means of estimating the *total nitrogen* in the urine, it is clear that we have only to subtract from this quantity the nitrogen present as urea in order to find the amount contained in uric acid, creatine, creatinine, hippuric acid, or other nitrogenised bodies which may happen to be present as morbid products. In my judgment, far too little attention has hitherto been given to the determination of this *residual nitrogen*, if I may be allowed the term, in diseased conditions. This may be due to the fact that under ordinary circumstances the determination of total nitrogen can only be successfully made by a person possessing some skill in one of the methods of organic analysis; but I have now the pleasure to describe very briefly a process which yields the desired results and yet is exceedingly simple and expeditious. I take a small tube of hard glass, about five inches long and three-eighths of an inch internal diameter; one end of this is drawn out before the blowpipe and bent so as to form an angle of about 45°. The tube is now supported in an inclined position and one cubic centimetre of the urine (about sixteen minims in bulk) very accurately measured into it by means of a carefully graduated pipette. A drop of sulphuric acid is then added and the liquid evaporated in the tube at a gentle heat, a current of air produced by an aspirator being made to pass over the surface of the liquid. When this small quantity of urine has evaporated nearly to dryness, the fine end of the tube is hermetically sealed, a quantity of "soda-lime" is then introduced, and the mouth closed by a good cork carrying a V-tube containing a very little diluted hydrochloric acid. A strong heat is now applied to the mixture of urine residue and soda-lime, and the ammonia resulting from the decomposition of the nitrogenised organic matters driven off. All the nitrogen present in the cubic centimetre of urine is thus obtained in the form of ammonia, the latter being wholly condensed in the acid contained in the V-tube. At the termination of the operation the acid is washed out of the V-tube into a glass cylinder, neutralised with pure potash diluted up to a known bulk, and then treated with "Nessler solution," the well-known and extremely delicate colour-test for ammonia. The depth of the brown tint produced by the reagent measures the proportion of ammonia, and therefore of total nitrogen, in the quantity of urine taken for experiment. The value of the result of the colour test is very expeditiously obtained by having at hand a number of standard solutions of varying depths of tint for comparison. If the total bulk of urine excreted in a given time be known we can thus easily and quickly determine with very exact precision the quantity of nitrogen removed by the kidneys.—*Medical Press and Circular*, *May* 13, 1874, *p.* 402.

39.—THE ACTION OF VALERIAN IN DIABETES MELLITUS.

M. Bouchard has lately investigated the influence of valerian on diabetes insipidus, and finds that it acts by diminishing the excretion of urea, and so secondarily the polyuria. After eight grammes of the extract of valerian the urea excreted may fall to forty grammes, or about 600 grains, per diem; and there is no diminution in the amount of urine observed until the urea has fallen below its normal quantity, and then only 2000 or 1500 grammes—*i.e.*, four or three pints—may be excreted in twenty-four hours. In other diseases the action of valerian is variable, but where any exists it can always be referred to the diminution in excretion of urea which it produces; and if there is no azoturia the action is *nil*. Thus, in diabetes mellitus, if urea is in excess, it may fall while the patient takes valerian from forty-five grammes to twenty-five or even nineteen per diem, and then the polyuria and glycosuria diminish in their turn. Dr. Bouchard considers that the action of valerian is to spare waste of tissue, and in support of this view he mentions that certain Indians of Lower California and Mexico are accustomed to go through a course of it for a month before they enter upon a severe expedition, so that they may be better able to bear fatigue. He gives it in frequent small doses, and gradually increases the amount taken until he has in some cases reached a dose of thirty grammes in twenty-four hours.—*Medical Times and Gazette, May* 23, 1874, *p.* 568.

40.—ON DIABETES FROM CARBONIC OXIDE.

By Dr. B. W. Richardson, F.R.S.

The brief notice of Dr. Pavy's interesting experiments on the production of diabetes by the inhalation of the fumes of the Lycoperdon giganteum (common puff-ball), reported in the Lancet of last week, calls from me the following brief notice.

Immediately after I had discovered the anæsthetic action of the fumes of burning lycoperdon—viz., in 1853,—research was made as to the agent in the fumes that produced the physiological effect. I commenced this inquiry on my own account; but before my analysis was completed I received a request from Snow to visit him at his laboratory in Sackville-street to witness his analysis. I went as desired, and was shown, beyond all dispute, by Snow, that the active agent in puff-ball smoke is carbonic oxide gas. A short time afterwards, and before Snow had time to publish his new observation, Thornton Herapath sent me word that he had made the same discovery. Herapath published an account of his research at once, so that the originality of the observation that carbonic oxide is a product of the slow combustion of the lycoperdon has very justly rested with him.

When the matter under inquiry had been demonstrated thus far, I commenced a series of researches on the comparative action of carbonic oxide upon animals. I found precisely the same effects from this gas when it was administered, well diluted with air, as were observed from the fumes of the lycoperdon. The insensibility produced was the same, and the peculiar bright redness of the arterial blood was the same.

At the same time a most interesting new point was observed—namely, that dogs made to inhale carbonic oxide were rendered temporarily diabetic. I collected the urine passed after exposure to the gas, and found it contained glucose in considerable quantity. I made this subject a point of illustration in a lecture on diabetes delivered at the Grosvenor-place School of Medicine on November 22nd, 1861; and the report of the lecture, published by Mr. Macpherson in the Medical Times and Gazette of March 8th, 1862, although it is merely an abstract of the lecture, contains a brief but correct notice of the fact named. In an after experiment I found that coal-gas, which contains carbonic oxide, produces the same conditions as diluted carbonic oxide—namely, redness of the venous blood and saccharine urine.

A corroborative and singularly interesting observation has been made later still by Dr. Hesse. He noticed that two men who had been exposed, by accident, to the fumes arising from a stove heated by pit-coal, when they had recovered from the more imminent symptoms, were suffering from diabetes; their urine was charged with diabetic sugar.

In my experiments on the inhalation of oxygen, which have been extensive, I have compared the action of oxygen with that of carbonic oxide. In respect to the urine, it has seemed to me that there is a difference, and that sugar can only be produced freely by the action of carbonic oxide. A prolonged inhalation of an atmosphere in which carbonic acid was present in such weak dilution with common air as to cause torpor without asphyxia caused, however, evidence of sugar.

The hypothesis I formed, when I first observed the action of carbonic oxide in producing saccharine urine, was that the gas exerted its toxic influence through the nervous system. I doubt now whether this view is correct. In the last few years the researches that have been published on carbonic oxide, especially by Dr. Arthur Gamgee in his splendid paper published in the Journal of Anatomy and Physiology for May, 1867, point, I think, to the possible conclusion that the effect of the gas may be chemical and direct in the production of glucose in the animal secretion.

In Dr. Pavy's experiments with the fumes of the Lycoperdon giganteum, the agent at work has certainly not been oxygen, but carbonic oxide; and as my experiments have proved that the inhalation of carbonic oxide will produce artificial diabetes, and as it has been proved from the experiments of Bernard, Meyer, Hoppe, and Gamgee that carbonic oxide has the power of displaying the oxygen of the blood, I infer that when sugar is formed by the synthetical method now being considered, carbonic oxide, and not oxygen, is, either directly or indirectly, the cause of the phenomenon.—*Lancet, Sept.* 5, 1874, p. 340.

41.—ON THE THERAPEUTIC VALUE OF SOFT WATER IN URINARY CALCULI AND INDIGESTION.

By Dr. John C. Murray, Newcastle-on-Tyne.

For seventeen years that I perseveringly attempted the solution of stone with hard water, I experienced the same disappointment which, in the practice of physicians in London and other hard-water areas, has doubtless prevented chemical solvents from being of service, the quantity of mineral acid which would agree with the stomach being often just sufficient to neutralise the earthy salts daily consumed in the water, or at least not adequate to check the tendency to alkaluria. I have frequently, indeed, thought they did harm by causing some of the lime and magnesia to enter the blood in solution, which else might have passed through the bowels. Alkalies also frequently increase the irritation of the stomach, and cause a greater formation of acid, as explained by Professor Trousseau. For the last thirty months I have ordered every bilious or calculous patient to use rain or distilled water, and the result has been so successful that I have a respectful fear of detailing the cases from dread of scepticism, and am therefore the more anxious that the medical treatment of calculi should be undertaken by one or more disinterested physicians as I have suggested, in the wards of a hospital, so that the cases may be watched by the profession. I may, however, state that, as the result of this practice, I have a nice little collection of water-worn calculi, and that I have been disappointed of many more, some having been passed while bathing (as attested by the sharp forcing pain, and lacerated, bleeding urethra), some in the water-closet or by the wayside, a very interesting case by crumbling to powder on a warm mantelpiece, and not a few by patients at a distance neglecting their own interests and that of science by not forwarding them.

Even those who are unbelievers in the reduction of calculi by means of solvents are in no slight degree bound to support a crucial test as combined with distilled water—first, in the interests of that too numerous class who have renal calculi; second, as operation for stone has to be repeated once in about six times, that the surgeon may tell the patient how to prevent a recurrence; third, when lithotrity is performed to assist in washing away the detritus.

There ought to be no lack of interest in this subject, for during the past year its importance has been emphasised by the fact that an ounce of lime has put *hors de vie* one of the most marked men in the world's history. Permit me to glance at the late Emperor Napoleon's case as one in point. The frequent and heroic courses of Vichy water and other alkaline waters which the late Emperor took, probably under the advice or impression that the pains which he frequently suffered where of rheumatic, and not, as they seem to have been, of dyspeptic and calculous origin, would have a chemical tendency to cause the deposit which formed the nucleus of his calculus—viz., amorphous phosphate of lime,—and surround it by the crystalline phosphate. When he came to Chiselhurst, the chalk water there, together with the irritation of the slowly forming stone, would be sufficient to decompose urea and cause rapid deposit of the triple phosphate, lime and mucus having especial tendency to decompose urea. Had the Emperor gone to reside in a part where the water was soft, such as where the Empress's Scottish ancestors belonged, or used rain or distilled water with mineral acids, I think he might have lived, and possibly once more have sat upon the throne of France, and that the calculus would have slowly decreased in size, becoming at last sufficiently small to pass *per via naturales*, as the post-mortem appearances seemed to indicate that many previous ones had done.

To prescribe soft or distilled water in cases of stone or gravel is somewhat new in medicine, and to order it in indigestion and derangement of the liver is still more novel, at least out of London, although the mode of life may be accumulating in the system the elements of biliary or renal calculi which are being eliminated with daily increasing difficulty; yet the best time for treatment is obviously before the stomach, liver, and kidneys become seriously impaired. The great benefit which is often derived from a change of residence in stomach and liver complaints is probably from change of water rather than of air. Air being so diffusible, it cannot be much different in one part of the country from another, but the water is not alike in any two places. I therefore hope that before long we shall have a tabulated statement of the qualities of the drinking-water in the various health resorts, so that we may know where to send hepatic and calculous patients for their advantage. At present there is too much haphazard in the matter of recommending a change. Generally, if a place has fewer wet days, a quarter per cent. less carbonic acid, or a suspicion of more ozone than another, it is preferred, without taking into account that from the five pounds of water daily used the patient may take fever and die, or contract the nucleus of a calculus and linger only to suffer a life of misery.

Few are more sensitive than I am to the impropriety of raising unnecessary alarms, for I firmly believe it an excellent rule (preventive medicine notwithstanding) to eschew medicine unless when really ill. To this wholesome rule, however, cases of stone form a frequent exception. A child, adolescent, or woman, for example, may have a stone gradually enlarging without being aware of it; whereas a man of forty or upwards, being cognisant of liability, is alive, if not to the first, at least to early symptoms, and generally seeks advice.

Deeming that the prevention and solvent treatment of calculi demand more careful and extended practical attention than the subject has yet received, I beg respectfully to press upon the profession the great importance of this line of study, trusting that the authors of our future text-books on urinary pathology will devote more time and space to this too neglected department of our art; a sub-division, moreover, which yearly becomes of more consequence as we further depart from rural habits and live more at the call of the telegraph and upon the rail. For railway travelling, it has been observed, tends to induce urinary disease.

But if the circumstances of our being be different from those of our ancestors, we are also possessed of more chemical and physiological knowledge calculated to counteract the evil effects of dense population and trade competition; and if we do not apply that knowledge at least as soon as the need for it becomes apparent, we would deserve to suffer the punishment, provided always that it fell only upon the guilty. Our mode of living in 1874 does not permit all of us to eat and drink what we might choose, but too often only when and what is most convenient, or will best suit us. If our system gets out of order, it is an indication that we are living in error; and the chemistry of this year of grace would deserve opprobrium were it incapable of showing in what that error consisted. I fear, however, that the fault does not lie with chemistry but with medicine. Our bodies are chemical laboratories, and every physician, especially those who lead in urology, ought to be expert chemists in order to remove our practice from the field of empiricism, and render it sufficiently plain for those who, in consequence of lacking time for study—country practitioners, for example,—may be satisfied with the opinions of others, and in a position to treat their trusting patients in a rational manner. Trousseau, in his lectures at the Hôtel-Dieu, said that 299 physicians in 300 were very bad chemists, and immediately after gave a sufficient reason for disregarding chemistry in medicine by stating that "therapeutical action does not admit of chemical explanation: it is essentially vital or physiological." We must be upon our guard against this convenient way of shelving our chemical books. I confess to being unfortunately one of the 299 who have forgotten most of my chemistry, and therefore cannot speak oracularly upon chemical decompositions within the body, but the principle, being supported in practice, must be essentially right; and be it observed, moreover, that animal chemists are not content with a theory unless they can produce the same compounds in the laboratory that are formed in the organism. Urine and all the fluids of the body have chemical reactions, and however much vital or physiological action, or albumen taking the place of an acid, may accelerate or retard chemical combinations and decompositions, they will, nevertheless, take place. It was proved by Brande in 1808 that urine can be rendered acid or alkaline by medicine, and being only a secretion from a vital fluid, and not itself vital, chemistry, in regard to it at least, is paramount over "vital action;" hence the sooner and more diligently we return to our chemical studies in urinary complaints the better.

There is an imminent risk of calculus where the urine shows frequent deposits; if they consist of uric acid or urates, it indicates (1) that the blood is insufficiently alkaline, (2) that the urine is too acid, and (3) that there is a deficiency of water. We should then give half-drachm to one-drachm doses of bicarbonate, citrate, or acetate of potash four times daily with twenty ounces of soft water, and direct that everything which tends to form or cause deposition of uric acid or urates be avoided, such as much animal food, fat, pastry, sugar, acid fruits, over-eating, alcohol in any form, sulphur (or articles rich in it, as peas, beans, eggs, cabbage, mustard); also that the patient take more exercise in order to oxidise the uric acid and to encourage perspiration and consequent elimination by the skin of carbonic, uric, butyric, and lactic acids. When oxalate of lime and phosphates are precipitated as gravel, the urine is generally plentiful, and opposite directions are, as a rule, appropriate. For example, the more animal food which is eaten the better; laziness is an advantage; a little whisky or brandy is admissible; mineral acids must be taken; and a lesser quantity of soft water will suffice. I have not found nitro-muriatic acid fail in restoring the urine to an acid state. Even in ammonæmia with subacute cystitis and phosphatic renal calculi, it has sufficed, when the food was prepared with distilled water, and also about three pints drank in twenty-four hours so as to maintain diuresis.

The symptoms of stone having already formed are generally so evident that sounding, even when applicable, is unnecessary, except to ascertain its size. The best indications for treatment are then, as in all urinary complaints, afforded by the frequent use of the microscope, for different layers in a calculus often require diverse treatment. But while studying appropriate remedies the dissolving process may still be going on, for "water will hard marble wear away," and copious draughts of soft or distilled water will have the same effects upon a stone. Even without medicine it will produce an impression upon a calculus of any kind, and will preserve in solution and wash away the material which would otherwise accumulate upon it; and, what is very important, it will improve the health. Soft water, even a deluge of it, is rarely, if ever, otherwise than beneficial. It dissolves the nutritive matter out of the food, thus supplying the body with aliment which would otherwise pass through the bowels undissolved or enter the circulation in a state less capable of healthy assimilation. The advantage which is derived from the free use of soft or distilled water in improved elasticity of frame and diminution of fat in the obese is a recommendation in favour of diluents. If the nuclei of calculi were examined when recent it would probably be found that microscopic crystals of oxalate of lime formed the nucleoli of 20 per cent., uric acid 70 per cent., and biurate of lime and biurate of magnesia nearly the remaining 10 per cent. If the urine were preserved in an unsaturated state by sufficient soft water, no nucleus would form, or if a deposit did occur upon a particle of mucus, it would be washed away by the frequent renewal of the urine passing over it.

I have said nothing relative to the solution of stone by injection with or without galvanism, because I think that the less the bladder and prostate are irritated by instruments the better, for even the passing of a catheter, as in Baron Dupin's case, may cause death. But where a triple phosphate or oxalate of lime calculus is causing serious mucous irritation, the bladder might advantageously be subjected to a four hours' irrigation with nitro-muriatic acid in distilled water at blood heat, in order to begin the treatment, and check the formation of mucus, pus, and the decomposition of urea.

I am much pleased to find that since I first penned this paper, in January, 1873, Dr. Jno. Gardner, of London, has published an interesting volume on "Longevity," in which he recommends the free use of distilled water for preventing disease and prolonging life; and that Mr. Cadge has within the last few weeks given to the profession recent and extensive statistics, which will be of great service in this line of study.

I firmly believe that we may reply affirmatively to Sir Henry Thompson's question in "The Preventive Treatment of Calculous Disease"—"Can we do anything to prevent the formation of stone in the urinary passages?" and think with Dr. Hassall "that the very circumstance of the occurrence of stone affords a convincing proof of the incompleteness of the present state of medical science;" and trust with Dr. Harley "that the day is not far distant when a patient with a stone of any size in his bladder will be looked upon in the light of a clinical curiosity."

The object of this paper is to keep the solvent mode of treatment before the profession, in order that that day may be brought more near.—*Medical Times and Gazette*, *Oct.* 24, 1874, *p.* 469.

SURGERY.

FRACTURES, DISLOCATIONS, AMPUTATIONS, AND DISEASES OF BONES, JOINTS, ETC.

12.—ON AN IMPROVED EXTENSION APPARATUS FOR THE TREATMENT OF FRACTURES OF THE SHAFT OF THE FEMUR.

By G. Buckston Browne, Esq., Demonstrator of Anatomy at University College, London.

The perfect cure of an oblique fracture of the shaft of the femur, when the ends of the bone have been completely displaced, has baffled the ingenuity and the skill of surgeons from the time of Hippocrates. The fact that a recovery with half or three-quarters of an inch shortening is at present considered satisfactory should serve as an excuse for the introduction of any improvement in treatment, however slight the alteration may appear.

The opinion of surgeons at the present day will be found to be almost unanimously in favour of treatment in the straight position, as ordinarily practised before Percivall Pott advocated the so-called physiological method or treatment by position.

Hitherto the difficulty has been the proper application of extension. Ordinarily it has been kept up by means of a long splint (Liston's splint), or by means of weights or screws, or, more recently, by elastic traction. The objections to Liston's long splint are that it is apt to strain the ankle-joint, and that, notwithstanding the greatest care, awkward sores are liable to form about the malleoli and over the tendo Achillis. Serious shortening, moreover, not unfrequently attends this mode of treatment. Weight extension, however carefully applied, is generally cumbrous, and always more or less remittent, for the cord is very apt to get entangled with the bed-clothes, or to slip off its pulley, especially when the patient has to be moved.

Mr. De Morgan and Mr. Cripps have each invented ingenious splints, in which continuous elastic traction is employed. It was in search of an apparatus rather simpler than these that the writer first employed the elastic stirrup extension, described in Mr. Berkeley Hill's "Essentials of Bandaging," p. 74. It was found, however, that the extension could not be properly regulated, and that the foot was drawn so forcibly outwards towards the splint that much force was lost, and the skin over the external malleolus endangered. To remove these objections the apparatus here figured was proposed, and, meeting with Mr. Erichsen's approval, was adopted in his wards, with hitherto good results.

The figures will for the most part explain themselves. The foot-piece (G, Fig. 1) is a piece of wood, four inches by two and a half, notched to receive a stout india-rubber ring (F), technically known as a "horse's cutting ring." The foot-piece and the ring are secured to the limb by means of an ordinary stirrup of stout strapping, two inches wide, extending above the knee, so as to relieve the joint of strain. A long splint is prepared, reaching from the axilla to about eight inches beyond the foot, to the lower four inches of which is screwed a piece of one-inch plank (A), about eight inches long. This piece of wood throws the direction of the traction into a line with the axis of the limb. The limb is then bandaged in the usual way to the long splint, the bandaging being begun above the ankle. When the bandage has been carried above the knee, the leg and splint are grasped together by the surgeon, and extension is made while the perineal band is tightened. A hip spica and a body roller complete the bandaging, but it is well to secure the body roller to the splint by a row of tinned tacks. (In the figure the bandaging is left imperfect to show the perineal band.) Then on the plank (A) is screwed the bracket (B), through which slides the stem (D) of the hook (E). Along the stem and below the bracket runs the screw-nut (C). The hook is now fixed to the ring; and, the stem being passed through the bracket, extension can be made by screwing up the nut. The bracket and stem are similar to those sold by ironmongers for securing the cords of window blinds, except that in place of the hook there is a little grooved wheel. This wheel is easily changed for a hook; or the whole apparatus, ring and hook, can be obtained from Messrs. Mayer and Meltzer, of Great Portland Street.

Fig. 1.

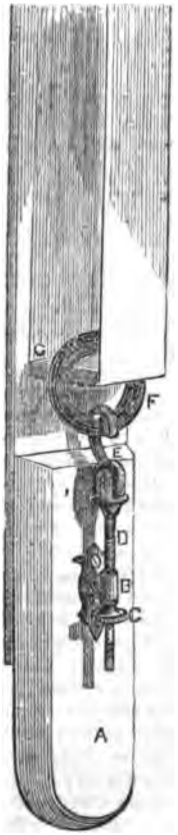
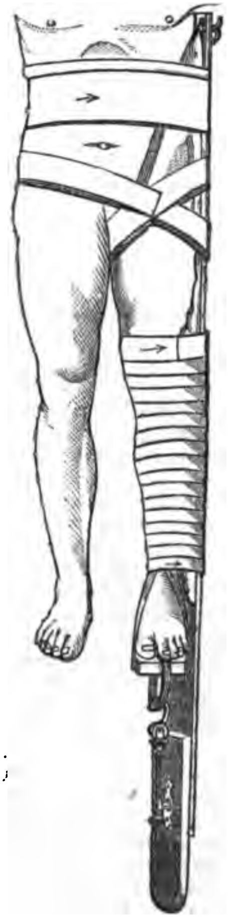


Fig. 2.



The advantages of this instrument may be thus summed up:—The amount of extension can be regulated to a nicety; the extension is constant, for it remains unaltered when the patient is moved or lifted out of bed; and the bony prominences of the foot are free from all pressure. Finally, it is hoped that by the adoption of this very cheap and simple method shortening may be reduced to a minimum.

The following results have been obtained by the writer, and by his successor as house-surgeon, Mr. Maclean, in five consecutive cases of oblique fracture of the shaft. All, except the second, were caused by indirect violence, the last two being very severe cases of double fracture:—

Name.	Sex.	Age.	Seat of Fracture.	Result.
A. M.	Male	28	In lower third	No shortening.
J. B.	„	17	In middle third	„
J. C.	„	65	Junction of upper and middle third	„
J. N.	„	37	Double fracture: 1. Lower third (oblique) 2. A fracture into the knee-joint	¼-in. shortening.
A. W.	„	8	Double fracture: 1. Junction of upper and middle third. 2. Junction of middle and lower third.	⅛-in. shortening.

Many other cases of fracture of the femur which have been treated in this way are not mentioned, as they do not come under the head of oblique fracture of the shaft with shortening and deformity.—*Lancet, Oct.* 10, 1874, *p.* 511.

43.—EXCISION OF THE ANTERIOR TARSUS AND BASE OF THE METATARSUS—A NEW OPERATION.

By Dr. Patrick Heron Watson, F.R.S., Senior Surgeon to the Edinburgh Royal Infirmary.

[The patient was a lad, æt. 19, suffering from disease of the anterior portion of the tarsus, spontaneous in its origin, subacute in its progress, and productive of such pain on movement or pressure that the lad was unable to walk or work. Amputation of the foot seemed too severe a measure to be justified by the condition of the parts, although there could be no reasonable doubt that suppuration had already commenced within the bones and joints involved. After reviewing Chopart's, Hey's, and other possible operations, and showing their unsuitability for this case, the writer continues as follows.]

The operation I will now describe was justified as a proceeding amply sufficient to effect the extirpation of all actually existing diseases of bones and joints in the foot, and of securing as a result a foot which would be more seemly, if not more useful, than an amputation at the ankle-joint. After the application of the tourniquet to the lower part of the thigh, the operation was effected by making an incision on the outer and inner sides of the foot, between three and four inches in length; that upon the outer side extending from the centre of the outer margin of the plantar surface of the os calcis as far as the middle of the metatarsal bone of the little toe, that upon the inner side of the foot from the neck of the astragalus to the middle of the metatarsal bone of the great toe. The soft parts were then carefully dissected off the dorsal and plantar surfaces of the tarsus from the outer and inner sides, until the whole extent of osseous tissues to be removed was deprived of its soft coverings. In effecting this, the thumb of the left hand formed the guide to the point and edge of the knife in keeping close to the surface of the bones, so as to avoid any interference with the important structures contained in the soft parts. A curved probe-pointed bistoury inserted between the soft parts and bones was then carried across the line of articulation, between the astragalus and scaphoid and os calcis and cuboid bones, first upon the dorsal, and then upon the plantar surface, so as to open up these joints. A little further use of the knife completed the severance of the bones posteriorly. A keyhole-saw was now introduced between the plantar soft parts and the shafts of the metatarsal bones, which were then cut through, one handle of a pair of bone forceps being inserted between the metatarsal bones and dorsal soft parts to protect the latter from injury by the teeth of the saw cutting from below upwards.

After the operation, and before removing the tourniquet, the entire wound was plugged firmly and securely by means of pledgets of lint passed through and through the gap in the foot, and laid in closely one upon the back of the other, so as completely to fill up the aperture, and, at the same time, so closely crowded together as to secure, when pressure was applied from the outside by other pads supported by a bandage, that no bleeding should take place. This dressing was retained *in situ* for forty-eight hours. When removed there was no bleeding, and the dressing was reapplied. The parts were dressed from day to day, pads of lint being placed in the cavity, with the view both of affording internal support to the soft parts, and also of securing that consolidation should take place from all the surfaces of the wound equally, without the possibility of an early closure of the lines of incision giving rise to bagging of matter and after disturbance. Externally, support was effected by two gutta-percha splints applied upon each side of the foot, external to the dressings, so as to admit of the patient getting out of bed and moving about with crutches at as early a period as possible.

The dressing was inserted into the wound for a period of six weeks, after which it was only applied superficially; the openings had not, however, closed finally for three months. During the latter portion of this period, a gutta-percha pad was bandaged against the hollow of the foot, so as artificially to maintain an arch between the posterior part of the foot and the anterior extremity of the metatarsus.

When I last saw this patient, six months after the operation, he walked smartly and well, with none of the stumping gait of an amputation. I have today been assured by Dr. M'Dougall, that the last time he saw him, now some months ago, he walked almost without defect; and he adds, "The operation in his case I considered a great success."

Since the successful result attained in this case, I have operated in an exactly similar manner in five other cases. In all of them, the disease was in a more advanced stage, abscesses having formed, and sinuses existing. One of these cases I now present before the Society, that they may judge of the results for themselves. In this case the operation was performed upon the 23rd of September of last year. The wound was, practically speaking, healed in November, and for the last two months the patient has been walking about.

Upon the last case, I only operated upon the 13th of the present month. The patient is out of bed, and doing well.

In only one of these six cases upon which I have performed this operation, have I had occasion to resort to further interference. In this case, the patient had long been the subject of disease of the tarsus, and, through vain endeavours to avoid operative interference, had become nearly exhausted. The operation afforded complete relief; but as the system of dressing the whole cavity of the wound was abandoned from the first, out of regard to the patient's sensitiveness and weakness, the lines of incision closed, and matter began to bag in the deeper parts of the wound, occasioning pain, and exciting anxieties in the patient's friends lest disease was about to return. I was induced, under these circumstances, to resort to amputation at the ankle-joint, and was thereafter chagrined to find that there was no condition which should not have admitted of sound cicatrization, had the method of dressing the cavity of the wound been rigidly carried out.—*Edinburgh Medical Journal, May* 1874, *p.* 963.

44.—ON BLOODLESS SURGERY.*

By Dr. Fr. Esmarch, Professor of Surgery in the University of Kiel.

During my present visit to England and Scotland, I have often found occasion to speak with other surgeons on bloodless surgery. I found that some were but imperfectly acquainted with the method; that others applied it, but not in the right manner; that others again attached no importance to the avoidance of hemorrhage during an operation.

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* Address delivered at the Clinical Society on October 9th.

This experience induces me to address a few words on the subject to this Society, because I hope to find many present who have acquired similar views to my own on the value of the method, and because I am convinced that it is scarcely possible to speak too often or loudly enough on the influence which this method must exercise on what we call good fortune in surgery. Without doubt, the best proof of the value of any method is afforded by the influence on the mortality after the greater operations, and especially after amputations of the limbs.

I lately compared the results obtained in my practice after operations performed bloodlessly with the recently published results of operations performed by other surgeons, and I found that my results were much better than the best of these, including even those in which the antiseptic method had been strictly followed. But you may very properly object to this, that it is not conclusive to compare the statistics of other hospitals or surgeons with my own, because the circumstances in different hospitals, and the cases as well as the treatment are so different, that they do not admit of comparison without a detailed account of the individual cases.

Much more important, undoubtedly, must be the comparison between cases occurring in my own practice and performed in the same hospital previously to the application of the bloodless method and afterwards. This comparison I am able to offer.

I have put together the statistics of the operations I performed during the last six years, and have found the most striking results. I shall only mention to you, as an example, the statistics of the amputations of the thigh and the leg. Of 88 amputations of the thigh performed in the first five years, there died 37, or 42 per cent. Of 67 amputations of the leg, there died 19, or 28.3 per cent. After the adoption of the bloodless method, there died, of 13 amputations of the thigh, only 1; and of 12 amputations of the leg only 1; so that the proportion of fatal cases in amputations of the thigh and leg together is brought down rom 36 to 8 per cent.

Even admitting the error which may result from the difference of the numbers compared, I am of opinion that these statistics afford such striking evidence of the value of bloodless surgery, that no one should neglect this method in cases to which it is at all applicable. Nor should its use be limited to operations on the extremities, but it should be extended to other regions with such special modifications as each case may require. For instance, I at one time believed it to be impossible to use it in amputations at, and in excisions of, the shoulder-joint; but a few trials showed nothing to be easier. For these operations, it suffices to pass the elastic tubing under the armpit, and to have it tightly held over the shoulder by the hand of an assistant, replacing the latter by a clamp in more protracted operations. In some cases, however, compression by aid of the elastic tubing does not suffice to prevent the afflux of arterial blood, and in these other means for the prevention of hemorrhage must be resorted to. Allow me to detail a case of this description. In the course of last summer, a man between fifty and sixty years of age, with a tumour of the size of an ostrich's egg filling his right armpit, was admitted into my hospital. The tumour had attained this size in the course of two years; and, as it caused great pain, and quite incapacitated the patient from work, its removal at all hazards was wished for. The tumour was firmly wedged in between the chest and shoulder-blade, to the anterior surface of which it seemed to adhere, all movements of the scapula being communicated to the growth, which was unaffected by rotation of the head of the humerus. The presence of severe pain in the arm led to the supposition that adhesions existed between the growth and the nerves in the armpit. Microscopic examination of a piece of the tumour removed by means of an exploring trocar showed it to be a myxosarcoma. Growths of this nature are known frequently to take their origin in nerve-sheaths; and, as risk of rapid relapse in such cases can only be obviated by the operation for their removal including the surrounding tissues, even if these be apparently healthy, I considered that indications existed for removal of the whole arm with the scapula. The elastic tubing could not be applied in this case, nor could other means of compression be resorted to, as the pulsation of the subclavian artery was not to be felt, the tumour having pressed the shoulder upwards, and thereby considerably deepened the supraclavicular fossa. I therefore determined to tie the subclavian artery. I commenced by bandaging the arm up to the shoulder with elastic webbing, and then removed the outer two-thirds of the clavicle, for the purpose of exposing the artery, a course rendered necessary by the altered relation of the parts. Both subclavian artery and vein were then ligatured and divided. The cords of the brachial plexus, which were tensely stretched, and which partly entered into the substance of the tumour, were then cut through. I then made anterior and posterior skin-flaps, and quickly removed scapula and arm with hardly any loss of blood, only a few vessels in the divided muscles requiring ligature. The wound was united by sutures and dressed with carbolised oil. The reaction was moderate, and healing was nearly completed at the time of my leaving Kiel.

The applicability of the bloodless method is, however, not limited to the extremities. Tumours situated in other parts of the body, provided they be superficial, can also be removed without hemorrhage. For instance, in operating upon erectile tumours of the scalp in children, all bleeding can be prevented by compressing the surrounding parts by means of steel rings mounted on handles. In operations on the trunk, the same object can be attained by a thick ring of india-rubber secured by elastic tubing. Operations on the male genitals can also be performed bloodlessly by the employment of a slender piece of elastic tubing, made to encircle the root of the penis and scrotum. It was thus possible for me, for instance, to perform the following operation, the execution of which I should not have attempted under former circumstances.

Last winter, an old man presented himself for admission, suffering from epithelial cancer of the penis of several years' standing. The anterior surface of the scrotum, and the penis within an inch of its root, presented a mass of cauliflower excrescences about the size of the palm of the hand, the seat of offensive discharge, and the occasional source of copious hemorrhage. There was a narrow fissure in the centre of the growth, through which urine was passed with difficulty. The inguinal glands on both sides were enlarged and adherent. The patient was so weak and anæmic that I could not have ventured on operative interference in this case without the bloodless method. With its aid, however, I was enabled fearlessly to undertake an operation, the immediate effects of which were most satisfactory. I began by passing a piece of elastic tubing of the thickness of a little finger round the root of the penis and scrotum; I then crossed it over the symphysis pubis, then passed it backwards, crossed it again over the os sacrum, and finally secured the ends over the abdomen. I then removed the whole growth, including the penis and anterior wall of the scrotum, without losing more blood than was contained in the parts prior to constriction; the vessels being easily recognised and carefully secured after division. I then removed, with all possible speed, the enlarged glands, together with the integument, from both inguinal regions; separated the crura penis, which were found to be endurated, from their attachment to the os pubis, dissecting them carefully from the posterior and healthy part of the cavernous body of the urethra; and then divided the posterior surface of the scrotum by a median incision, at the posterior angle of which I fixed the remaining part of the urethra by sutures, and finally covered the wounded surface anteriorly and in both inguinal regions with the scrotal flaps. The old man had lost but little blood, and was very well after the operation. The large wound healed without any unfavourable symptoms, and he was about to be discharged to his home, when suddenly fever and symptoms of pleuritic effusion supervened. The patient died in a few weeks of exhaustion. The necropsy showed extensive cancerous deposits in the lungs and pleuræ, with effusion into both pleural cavities.

Gentlemen, I am afraid I have trespassed too much on your time and patience by detailing these cases. I will, therefore, only add in conclusion that, in the three hundred cases in which I have used the bloodless method, I have met with no evil consequences which could be attributed to it. It may, perhaps, be of some interest to state that the longest operation which I performed by this method lasted two hours and a quarter. It was a case of necrosis of both tibiæ, with suppuration of the knee-joint on one side, in which I first removed many pieces of dead bone from one tibia, and then performed resection of the knee-joint; my assistant being at the same time engaged in operating for necrosis on the other limb. This is a different case from that already reported in one of my papers on the subject.—*British Medical Journal, Oct.* 17, 1874, *p.* 491.

45.—ON BLOODLESS OPERATIONS.

By William Mac Cormac, Esq., Surgeon to St. Thomas's Hospital.

To those who have not actually seen in use the simple mechanism invented by Professor Esmarch for the prevention of hemorrhage during operations on the extremities the title of this paper may perhaps seem somewhat exaggerated. It is nevertheless true that it is now possible safely and securely to perform almost any operation on the limbs without the loss of a single drop of blood.

It was not until August in the past year that the brief record of Professor Esmarch's procedure, as related to the second congress of German surgeons held in Berlin last Easter, became known to me. The plan there detailed struck me as being at once so simple and so likely to prove effectual, that I hastened to put it into practice at the earliest opportunity.

It happened that I had under my care at the moment a little delicate girl of six years, suffering from necrosis of the shaft of the tibia. On my way down to the hospital on August 16th, 1873, I purchased about three feet of india-rubber rope, half an inch in diameter, and an elastic bandage two inches and a half wide, and six yards long. To the end of the india-rubber rope I fastened a couple of hooks, and the apparatus was complete. Whilst the little patient was being chloroformed I bandaged the limb from the toes to the mid-thigh, keeping the elastic bandage on the stretch whilst it was being applied, so that the entire limb was firmly and equably constricted. So soon as the anæsthesia was complete the india-rubber rope was applied close to the upper border of bandage, being turned around the limb three or four times, and the ends hooked together. the metal hooks resting on the subjacent rubber, and not pressing upon the soft parts. If the rope be long relatively to the circumference of the limb it is always possible to graduate the constricting force sufficiently, and it is important to know that the amount needful completely to shut off the current of blood is not so considerable as one might *à priori* suppose. Esmarch uses a tube three quarters of an inch in diameter. When it is desirable to distribute the pressure over a larger surface the tube is preferable to the solid rope. If economy of space be an object, as in an amputation high up in the thigh, then the smaller-sized rope possesses the advantage. In operations upon the upper extremity, the male genital organs, or the fingers, a smaller-sized tube or rope should be selected. Before applying the rope an interval of a minute should be allowed for the compression to empty the limb completely of blood. The elastic bandage may now be unrolled. By these simple means it will be found that complete local anæmia is produced. The bandaging has driven, practically, all the blood out of the limb, whilst the circular compression above completely prevents any from gaining admission during the time it remains applied.

The limb thus treated appears of waxy pallor, and the temperature becomes greatly reduced.

The subsequent steps of the operation were now performed in the case before mentioned with the greatest ease, and a moderate-sized sequestrum removed from within a casing of newly deposited bone. The wound throughout remained absolutely unstained with blood. Neither during the section of the superficial nor of the deeper structures did a drop of blood appear.

The wound having been firmly plugged with lint, and a bandage applied, the india-rubber rope was removed and a perfectly bloodless as well as painless operation completed, the first of its kind performed in England.

It appears to me difficult to overestimate the value of so simple and certain a method of avoiding hemorrhage during operations on the limbs, but it may be of interest to criticise its scope and the precautions necessary in individual cases.

But first one may say a word on the ever-disputed question of priority. The best answer perhaps is that, whilst previous somewhat similar methods have not to any considerable extent been adopted, or taken root at all, this plan of Professor Esmarch has spread so rapidly and widely that now, after the short interval since it was first made known to English surgeons, there are but few hospitals throughout the country in which it has not been tried and approved of. In France too where foreign surgery is not always welcome this procedure is being widely adopted. In the principle there is nothing new. Attempts more or less successful have been constantly made by surgeons to spare the flow of blood during operations, and even to save the blood otherwise lost in an amputated limb. The last have generally consisted in the elevation or bandaging of the limb about to be amputated prior to the application of the tourniquet or other compression. But these methods are not complete, and one form of tourniquet after another has been rejected. Indeed by many digital compression has been uniformly adopted in its stead. How often I have felt anxiety about the steadiness of my assistant's fingers compressing a main trunk during a great operation it is unnecessary to say, or how disconcerting to all concerned, and dangerous to the patient, a sudden gush of what Dieffenbach called "dämonisches Blut" is under circumstances such as these. The great and incomparable advantages of Esmarch's plan are its completeness and its simplicity.

Stromeyer went very near it when in 1853 he tightly bandaged an arm, the subject of traumatic brachial aneurism, and applied a tourniquet above, before tying the brachial artery at the seat of injury. Langenbeck mentions in the "Berliner Klinische Wochenschrift," December 29th, 1873, that for years past he has been in the habit, in cases of weakly patients requiring amputation of the thigh, of applying a wet bandage tightly to the limb from the tips of the toes to the place where the tourniquet is to be applied.

Mr. Clover made a similar proposal on which Mr. Erichsen acted some years ago. In France and in Edinburgh, and perhaps elsewhere, the limb has been simply raised to empty it partially of blood before applying the tourniquet. A very long time since, in 1806, namely, Sartorius, before proceeding to the extensive operation he deemed necessary in order to divide the tendo Achillis, mentions that "the limb was first enveloped with a roller bandage and a graduated compress and tourniquet applied to the femoral artery." He states, "but little hemorrhage took place." Finally, Professor Vanzetti, of Padua, claims on the part of Dr. Silvestri, of Vicenza, the priority of application of the elastic ligature and elastic compression in surgery.

It appears that Silvestri actually used bandaging and the elastic rope in amputations as early as 1862. But no general cognizance of his experiments was taken, and it will be noticed that in most instances they were only had recourse to in amputations of limbs. Professor Esmarch's simple means is applicable to all kinds of operations. In none perhaps is it more strikingly useful than in operations for necrosis of bone. In these the bleeding is sometimes excessive and difficult to restrain, whilst the presence of blood in the generally deep wound obscures the surgeon's view, and necessitates the constant sponging out of the cavity. The duration of the operation is thus necessarily much prolonged and its difficulty enhanced. In the interesting paper published by Esmarch in the "Sammlung Klinischer Vorträge," he mentions having performed a necrotomy on both tibiæ simultaneously, with aid of his assistant, Dr. Petersen.

After operations such as these the wound may be plugged before removing the constricting rope, and no bleeding takes place; but after amputation or excision it is impossible thus to secure all the bleeding points, and after securing the principal vessels the elastic rope must be removed before closing the wound.

Then a curious phenomenon is observed. A rapidly travelling blush extends down the limb, which in a few seconds presents an erythematous redness, and smart capillary bleeding occurs from the wound, whilst the patient is roused from the semi-narcotism he is in, and apparently suffers much pain.

Probably the previous constriction has induced some amount of vaso-motor paralysis, thus accounting for the redness of the surface. Although the capillary oozing is free, it is never difficult to restrain by suitable applications, while all visible bleeding points should be tied or twisted.

Another curious condition which may be observed in operations on the bones is their apparent bloodlessness, as well as that of the soft parts. In an excision of the knee performed by Mr. Arnott, and an excision of the elbow performed by myself, the bones seemed in a sense dry, and pale. The elastic bandage cannot, of course, force the blood out of the Haversian canals, but it is probably sucked out after its removal, into the emptied vessels of the soft parts, when their natural resiliency is allowed to act, and the blood remaining in the bone is distributed evenly over the entire limb. It is not a mere stasis of blood in the bone, there is certainly anæmia of it likewise. Great facility is afforded to the operator in consequence of this absence of bleeding from the bone, by enabling him accurately to define the limits of the diseased structures. Allowance must, of course, be made for the somewhat altered appearance of the exsanguine parts.

I have not observed any tendency to secondary hemorrhage in the cases I have operated upon, nor any nervous suffering by reason of the forcible constriction of the limb, nor has Esmarch, in the now large number of cases in which he has employed his method. The subsequent healing of the wound is certainly not interfered with. Esmarch believes that rapid healing is even promoted.

In the paper before cited he mentions having used the method in eighty-seven cases, twenty-one of which were amputations or excisions, namely: six amputations of the thigh, eight of the leg, one disarticulation of the shoulder, eight resections, thirteen necrotomies, and five removals of tumours, the rest being minor operations.

Of these eighty-seven patients only four died, and in most of the amputations the stumps healed by primary union, with scarcely any traumatic fever.

Von Langenbeck has pointed out that care must be taken in applying the india-rubber rope to the upper arm, as it may unduly press upon some of the rather superficially placed brachial nerves. In two cases he observed temporary paralysis of parts supplied by branches of the median nerve, which induced him to substitute in the upper extremity a few turns of elastic bandage around the limb in place of the rope. With this simple modification he has performed excision of the wrist joint and several other operations quite satisfactorily, and without any subsequent lesion of the nerves.

In cases where there are diffuse abscesses in the limb, or any putrid or gangrenous deposits, the use of the elastic bandage would certainly not be free from risk of pressing the septic materia into the general circulation. The same may be said of soft textured tumours, or cancers. In these cases it will be sufficient simply to elevate the limb before applying the elastic rope, and thus will all danger be avoided.

It has been urged occasionally that some loss of blood is desirable in certain cases. Such cases are, in my opinion, very rare indeed, and it cannot be difficult, when they occur, for the surgeon who desires to do so to allow any given quantity of blood to escape that he may wish the patient to lose. One great advantage to be gained by this method is the almost complete exclusion of sponges and sponging from the operation wound. One can never be sure, however carefully they be disinfected, that no infective material is retained in them. Besides, the mechanical obstruction caused by the constant sponging out of bleeding wounds is removed, and the operator can proceed unretarded. Esmarch does not use sponges at all, but irrigates the wound with a one per cent. solution of hydrochloric acid, which he prefers to carbolic acid as a disinfectant.

Possibly this method of Esmarch may prove useful in the treatment of certain aneurisms. We know now how readily aneurisms may often be cured in a few hours by the complete arrest of the flow of blood through the sac. For instance, in a popliteal and femoral aneurism we might easily and perfectly arrest the current of blood, and if the limb were previously, to some extent at least, if not completely, emptied of blood, the aneurismal sac would be allowed the opportunity of contracting in size, which would certainly prove a powerful adjunct to the compression in furthering a cure.

That the elastic rope might be applied sufficiently long to ensure the desired result would seem certain from the experiments of Cohnheim, who has proved that the circulation may be completely interrupted in warm-blooded animals for as long a period as six or eight hours, without any permanent bad effect ensuing. So far as it has been tried on the human subject, no accident to the circulation, such as thrombosis or inflammation of veins, or any permanent injury to the innervation of the part, has yet occurred as the consequence of even protracted elastic compression of a limb. In the treatment of wounded blood-vessels, and of traumatic aneurism, when it is desired to ligature the vessel at the seat of injury, Esmarch's plan would afford most certainly great facilities. Or, better still, the artery might be securely twisted, and the same thing might likewise be done in the continuity of arteries for aneurism. The vessel, after being exposed, might be cut through, twisted and each end allowed to retract. In an operation for aneurism, where the sac requires to be opened and the ends of the vessel entering and leaving it sought for and secured, Esmarch's method would prove invaluable.

Dr. Leisrink ("Deutsche Zeitschrift für Chirurgie," B. IV.) ligatured the anterior tibial artery in the upper third of the leg on account of traumatic aneurism, a feat scarcely practicable without the aid of Esmarch's plan.

How difficult such a small operation as finding a piece of needle or splintered glass broken off in the palm of the hand or sole of the foot may often prove, surgeons have frequent experience. The part being first rendered bloodless, however, a successful search becomes easy. The discovery of lodged bullets or other foreign bodies, the methodical and minute examination of diseased or injured parts, to ascertain if amputation or some less serious operation be needed, is also rendered less difficult and uncertain.

Further experience will, doubtless, be required before the full scope of this method, its advantages and disadvantages, can be definitively settled; but amply sufficient has already been recorded to show that we are indebted to Professor Esmarch for a complete and simple means of facilitating the performance of a large class of surgical operations, and of rendering them both safer to the patient and easier of execution to the surgeon. We certainly owe him thanks for this.—*St. Thomas's Hospital Reports*, 1873, *p.* 43.

46.—TRUE ANCHYLOSIS OF THE HIP-JOINT.

By Lambert H. Ormsby, Esq., Surgeon to the Meath Hospital, Dublin.

[Complete anchylosis of the hip-joint is by no means so rare as is commonly supposed. There are seven well-marked specimens of this affection in the museum of the Royal College of Surgeons of Ireland and many in the various London museums.]

True bony anchylosis can occur in the scrofulous subject, and attention and care may occasionally overcome the disposition to excessive flexion and adduction of the limb by keeping it in the straight position during consolidation. It may also arise in those unfortunate people who are bed-ridden for years, or in those suffering from some peculiar form of gouty or rheumatic diathesis. There is a skeleton of a man who had anchylosis of nearly every joint in his body in the Museum of the Royal College of Surgeons in Ireland, a full account and previous history of which appears in the Museum Catalogue; this, however, was of the fibrous variety in many of his joints. The diagnosis between true and false is sometimes not so easy to determine in the fibrous; it may be very firm, and closely simulates the true, but placing the patient fully under the influence of chloroform seems to me to be the best method of clearing up the difficulty, and then, if bony, very often that firm sensation will be given to your hand, and in moving the limb you move the pelvis with it; you may also do this in the false variety, but not to the same extent; the limb may be anchylosed straight, but more frequently the thigh is bent up and flexed on the abdomen, causing great deformity and perfect uselessness of the limb. This may be also followed by permanent flexion and deformity at the knee and ankle, and when all inflammation, abscess, &c., and constitutional disturbances about the joint have subsided. It is a matter of great moment to consider what is the best and safest operative treatment to be adopted for such cases.

We are not confined, I may mention, to any one particular mode of operating, but any of the operations for bony anchylosis before mentioned might be performed at this joint with certain modifications to suit the existing circumstances of the case; but I will mention three procedures which have been recommended and performed from time to time, all said to be peculiarly suited for bony consolidation in this articulation.

1.—*Dr. Rhea Barton's Operation.*—Dr. Barton, of Philadelphia, proposed to *establish a false joint after section of the bone;* he first performed the operation in 1826, on a sailor, named John Coyle, æt. 21, who had fallen down the hold of a vessel, and in doing so fractured his thigh-bone. Angular union took place, with great deformity, the limb being perfectly useless, and the man prevented from working, as the thigh was flexed, and leg carried over opposite side. Twenty months after the receipt of the injury, the operation was performed, and so far as it went, was attended with the greatest success.

Description of the Operation.—A crucial incision seven inches in length, and five inches in horizontal direction, made over the great trochanter; a fine saw was then inserted, and the bone was completely sawn through, just between the two trochanters. The natural position of the limb was at once and easily restored in the case operated on by Dr. Barton, the man was able at the expiration of two months to put his foot to the ground, and after four months he could walk a considerable distance; this man then gave himself up to debauchery and dissipation, &c., and he died of consumption thus produced nine years after the operation. He got an attack of inflammation two years before his death in this new joint, which was therefore anchylosed. This operation has frequently been repeated by surgeons with great success; by this procedure the bone must be laid bare, and motion must be constantly set up after division to prevent reunion taking place. A kind of capsular ligament is formed, and a rounded head is formed on the lower portion of bone, and an excavated cavity on the upper or fixed portion of bone, and a false joint thereby produced.

2.—*Description of Sayre's Operation.*—Dr. Lewis Sayre, of New York, performed his operation as follows: For the same object, an incision being made six inches in length, over the greater trochanter in the axis of the limb, a transverse section of the femur of elliptical form removed just above the lesser trochanter by the means of a chain-saw. Dr. Sayre performed his first operation after this method on a man æt. 26, on the 11th June, 1862, and in six months afterwards he is reported "to stand on either leg without crutch or cane," and continued to use his limb for many years afterwards with practical agility.

Dr. Sayre's second operation did not turn out so well, at least the patient did not; it was performed on a girl æt. 24, on the 6th of November, 1862, and she died on the 17th May, 1863, from an attack of pleuro-pneumonia; the wound, however, and discharge ceased four months after the operation. On post-mortem examination tubercular deposits were found in each lung, and a large abscess in left lung. The artificial joint was found to be provided with a complete capsular ligament, and the divided surfaces of bone were found tipped with cartilage, and furnished with a synovial membrane.

3.—*Mr. William Adams' Operation.*—Mr. William Adams, of London, has suggested and performed successfully, a most important modification of these operations, and his differs, in my opinion, particularly in three respects—viz.: 1st. The way it is performed; 2nd. The situation in which the bone is divided; 3rd. The instruments used in the operation. It is performed subcutaneously, situation being the neck of the thigh-bone inside the capsular ligament, and all that is required is a long-bladed tenotome and a narrow-bladed saw with a good handle; the saw is three-eighths of an inch in width, and with a cutting edge an inch and a-half in length. The following is Mr. Adams' description of the operation. He first performed on a man called Luke Bristowe, æt. 24, in the Great Northern Hospital, on the 1st of December, 1869, and divided the neck of the thigh-bone, inside the capsule, for anchylosis:—

"I entered the tenotomy-knife a little above the top of the greater trochanter, and carrying it straight down to the neck of the thigh-bone, divided the muscles and opened the capsular ligament freely; withdrawing the knife, I carried the small saw along the track made, preserving this by pressure of the fingers straight down to the bone, and sawed through it from before backwards; the section of the bone was accomplished in five minutes. No hemorrhage followed, and I immediately applied a compress of dry lint retained in position by strips of plaster and a bandage; as soon as the bone was cut through the leg moved freely in all directions, but before it could be brought into straight position it was necessary to divide the tendons of the long head of the rectus and of the adductor longus muscles, and to cut through the tensor vaginæ femoris muscle. The limb was fixed in a straight position and bandaged to a long interrupted Liston's splint; no inflammation whatever followed the operation; no swelling or redness of the skin or any deep suppuration, but the wound healed slowly." It is not necessary here to follow up the history of the case; suffice it to say that he recovered with a comparatively straight limb, which enabled him to walk with great ease, but the bones united and became anchylosed, a danger that is always likely to occur, but whether or not, you change a limb by the operation from being most useless and deformed to one that is straight, at all events, and useful for locomotion. There is generally a good deal of difficulty experienced in sawing the bone, but it generally can be overcome and effected with a moderate amount of gentleness and patience. For more information I refer you to Mr. Adams' before-mentioned pamphlet. Mr. Adams' operation has been since repeated by various surgeons, among whom may be mentioned, twice by Mr. Jessop, of Leeds; once by Mr. Jordan, of Birmingham; once by Mr. Somers, of Brighton; once by Mr. John Croft, St. Thomas's Hospital; once by Mr. Hardie, of Manchester, all of which were successful, with the exception of one case that was performed on a child. As soon as practicable after such operations and the subcutaneous incision healed, passive motion should be set up and every day for a few minutes applied; weights also are useful, attached to the feet to prevent union taking place, which is as well to prevent if possible, and if much pain is produced on moving the limb, with a view to set up passive motion, chloroform should be administered.—*Medical Press and Circular, May* 20, 1874, *p.* 417.

47.—ON TREPHINING IN DEPRESSED FRACTURE OF THE SKULL.

By William S. Savory, Esq., F.R.S., Surgeon to St. Bartholomew's Hospital.

[Almost all surgeons would be in accord on the question of interference in the majority of cases of depressed fracture of the skull, whilst differences of opinion would exist about the treatment of other cases. There are certain rules, so far as they can be laid down, by which the judgment of surgeons is usually guided.]

The question of operation is almost always associated with fracture of the vault of the skull, not only because depressed fractures occur much more often in the vault than about the base, but also because the operation itself is only applicable to one or two portions of the base. Fractures of the skull may be classified in the following manner, which appears to me to possess especial advantages with reference to the question of operation:—1. Fractures with or without depression of bone. 2. Fractures with or without symptoms of compression. 3. Simple fractures and compound fractures. This classification admits of great variation, and you will see how it is possible and also useful to ring the changes upon these three divisions when we come to the question of when the trephine should be applied.

There are two chief forms of fracture with which we have now to do: the ordinary split or fissured fracture, which is often starred, usually comminuted, and which affects us at present only as it is at the same time depressed; and the punctured fracture, the most important feature of which is that, whilst the outer table of the skull often presents but a slight depression, the inner table is much more severely broken and more deeply depressed. Forms of some of these fractures are well exhibited in these specimens from the shelves of our museum. Here is a skull, in the parietal bone of which there is a perfectly well-defined circular depression affecting both the inner and the outer tables, shelving smoothly down in the latter from all sides towards the deepest part of the dent—a thoroughly good example of the uniform, shallow, or spoon-shaped depression. Here is another, a depressed fracture of the occipital bone of a child of some twelve or fourteen years. It also is circular in form, gradually dipping down; but in addition to this, although not a true punctured fracture, it shows the main feature of such fractures—its inner table is much broken, and the outer scarcely more than bent inwards. This specimen, again, shows a much larger and more irregular piece of the parietal bone driven inwards, but not deeply. But look at this portion of the parietal bone of a young child. See how a small hole is, as it were, punched out with a trephine, so that at first sight it might be thought to be a specimen showing the effects of the operation. Look at it more closely, however, and you will then see that it is oval rather than round in shape; that on one side there is the slight fissure of a fracture extending from its border; that on the inside of the bone there are, attached to the margins of the aperture, and almost completely surrounding it, larger and smaller fragments of bone pointing directly inward toward the brain and its membranes. A better example of depressed fracture with the fragments driven in endways or edgeways it is impossible to find. Its history, too, is in some ways as typical as the specimen itself. A chimney-pot fell from the roof of a house upon the child's head. In spite of the heaviness of the blow and the hole bored completely through the skull, it is said that there were scarcely any symptoms during three weeks after the injury. Then inflammation of the brain took place, and speedy death was the result. It occasionally happens that the outer table of the skull alone is depressed, the inner escaping uninjured, or almost uninjured. Such may be the case when a fracture is sustained over the frontal sinuses, or over the mastoid portion of the temporal bone. Cases of this kind, of the former injury especially, are not uncommon in the wards.

The consequences of such fractures as have just been described fall naturally into a two-fold division: immediate and remote (or indirect). The direct consequence of the compression due to a depressed fracture is to produce coma, often mingled in various degrees with concussion, but marked especially, as you well know, by insensibility more or less profound, sluggish circulation, laboured respiration, and, as the case advances, increasing paralysis of muscle. Such a condition may quickly pass into death, by way of apnœa, or the patient may regain consciousness more or less completely, and in time become subject to the remote consequences of the injury. Fully to describe these would require more time than we can devote to this lecture. Shortly, they are all those produced by irritation or inflammation of the contents of the skull, giving rise to pain and fever, muscular twitchings and contraction, convulsions, delirium, coma, paralysis, and death. The consequences depend in part upon the nature of the fracture: thus, fractures of considerable extent and deep uniform depression are likely to be followed by coma; fractures which are much comminuted, where the fragments are driven in edgeways and the inner table especially damaged, are more likely to give rise to irritation or to set up inflammation—scarcely less likely, however, in the first instance to produce coma.

Now, let us consider in what fractures and under what circumstances we may be called upon to trephine or to decide against the operation. We shall here find the advantage of the rough classification laid down in the beginning of the lecture. I may state that under the term "trephining" all operations for the elevation or removal of depressed bone are included. In fractures without depression and without symptoms, whether simple or compound, the answer is obvious: Do not operate. In a simple fracture with depression, but without any symptoms of compression, the answer is also No, unless it happen that the fragments have been driven in endways or edgeways, when it is generally expedient to operate, in order to obviate or render less likely the remote effects we have seen are so liable to follow this kind of fracture. If there be a wound communicating with the fracture, the rule of treatment remains the same, the operation being rendered more obvious and easy than in the last case. Supposing that symptoms are present, but that there is no external wound, and that no fracture or depression can be detected, the treatment becomes more difficult. The symptoms may be due to other causes—to internal hemorrhage, to laceration of the brain, to a fracture in some part remote from the seat o injury. We, therefore, wait for a while and watch the patient carefully, ready at any time, if the symptoms do not give way, and if no contra-indication appears, to cut down and explore, our further treatment being guided by what we then find. The same case may occur, but with a wound of the scalp. Even under these circumstances, the rule is not to interfere at first, but to wait as before, keeping strict watch and noting whether the symptoms diminish in severity or whether they continue or increase. As complete an examination as the wound will permit is of course always made. The next class of cases is those in which both depression and symptoms of compression are met with. Here, perhaps, the rule is, even when the fracture is simple, to cut down and raise the depressed portion. Where such a fracture is compound we rarely hesitate to operate.

Much importance is laid upon the question of whether the fracture be simple or compound in standard works on the subject. I think too much stress has been put upon this point. That it should exercise a certain influence is, of course, perfectly right, for it is not a light matter under any circumstances to convert a simple into a compound fracture, least so when the skull is concerned. But when, on the other hand, the advantage which may be gained by a successful operation is considered, and the imminent peril in which the patient is placed in certain cases if no operation be undertaken, I think there can be no doubt that the right course to pursue is to cut down upon the bone, and explore. The greatest difference of opinion exists perhaps as to the right treatment to be pursued when there are symptoms of compression, as coma, but without clear evidence of depression. I agree in the main with what Mr. Erichsen has said on this subject—that when such symptoms exist, in all cases cf doubt, an incision should be made down to the bone, and the state of the skull examined. Further proceedings will depend almost entirely upon the condition of the skull when thus laid bare. There is one form of fracture in which the rule is constant to trephine at once. This is the punctured fracture, in which the inner table is usually much comminuted. It is of no consequence whether or not there be immediate symptoms of compression; the operation is not performed on account of these, but in order to prevent, if possible, the irritation and inflammation almost sure to be set up by the small and often sharp splinters which are formed.

Such are the ordinary rules by which we are guided in deciding whether to operate in depressed fracture or not. They are liable to be altered by certain circumstances, of course, and the circumstance of age is one which exercises as great an influence as any. The cases of children are decidedly exceptional. Strange as it may seem, although the brain is extremely sensitive to disease in childhood, and is easily disturbed by injury, the part disturbed or encroached on recovers more rapidly than in the adult. The "power of accommodation" is greater in the child. The injured part is able to adapt itself to the altered conditions far more quickly than at a later period of life. This is a subject well worthy of attention—a subject up to the present time very little worked at.

I will now relate the case which has formed the basis of this lecture, and you will see that, in accordance with what has just been said, the ordinary rule of treatment was deviated from, and the operation, which would have been practised upon an adult, was deemed unnecessary in a child.

On the 2nd of March there was admitted into Lucas ward a child eight months old. The mother, who brought her, stated that she was carrying the child down stairs, and that when some two or three steps from the bottom she had slipped and fallen. The head of the infant was struck in the fall, she believed, by the corner of the last bar of the banisters. Finding there was a deep dent in the head, she at once brought her to the hospital, although she did not think there could be any danger from the injury, as the child scarcely seemed to suffer at all, and even took the breast immediately. On admission, however, the child was quite unconscious, the face was pallid, the pulse small and scarcely perceptible, the skin cool and very moist. In the posterior portion of the left parietal bone, just above the squamo-parietal suture, was a deep depression in the skull, wide enough to lay the ends of two fingers in, and about a finger's breadth in depth. At the bottom of this could be felt the rough edge of the fractured bone. There was no wound of the scalp. I was sent for, but before I had time to arrive the symptoms of compression had passed off, and the patient was sitting up in its mother's arms. I therefore decided not to interfere, but to watch the case carefully. The next morning the child sat up, appeared to take notice of things as usual, cried, laughed, sucked, and seemed so well that about eleven o'clock the mother insisted upon taking it home. About half-past two she was again admitted, having hastened down from the City-road as quickly as possible, much frightened, because half an hour previously the child had turned up its eyes, and worked its hands and mouth violently for some seconds, after which it had fallen into a deep sleep. It was again in a similar condition of coma to that noticed on its first admission. I held consultation with my colleagues, whose advice concurred with my own opinion, that no operation should for the present be performed. Soon after we had seen it it recovered consciousness, and from this time until the afternoon of the 5th presented no signs of cerebral mischief. It then had a convulsion, affecting both sides of the body, lasting only a few seconds, followed by coma of two or three hours' duration. On the afternoon of the 6th a convulsion again occurred, which was followed at intervals of about an hour by similar convulsions through the rest of the day and night, until five o'clock on the morning of the 7th. The fits then passed off; the child appeared entirely to have recovered, and during the afternoon it was again taken away by its mother.

In this case there was therefore a simple fracture with depression, and with symptoms. The first signs of compression had passed off before I saw the child, but they were succeeded within a few hours by the more remote effects of the injury, effects due to irritation of the brain by the rough edges of the depressed bone acting through the dura mater. Bearing in mind, however, the wonderful manner in which young children become accustomed to such a condition of parts, seeing how well the child was between the attacks of irritation, and how quickly it had recovered from the first effects of the injury, we undoubtedly decided rightly in not trephining. It is probable that the child will recover completely, that all symptoms of irritation will, in time, subside, and that even the depression of the skull will become less as she grows older, the bone being gradually raised to a nearer level with the surrounding parts.

But although children often recover well, even from severe depressed fractures, it may be asked with regard to adults, Why not trephine in every instance of fracture where there is a depression? What can be expected from such a case if left to give rise to the secondary effects which have been mentioned? In the first place, the symptoms of depression, although associated with fracture, may be due, not to it, but to some other cause. It may be that the brain has been severely bruised or otherwise injured at some point remote from the seat of the fracture; that blood has been effused in large quantity upon the surface or into the substance of the brain, and that the symptoms are dependent upon these causes, not upon the pressure of the bone. Again, in adults sometimes, as in children, the symptoms may subside after a shorter or longer time through the same power of accommodation to the altered pressure. Lastly, the operation itself is by no means free from risk. Even with the greatest care, small chips of bone may be detached, may be left upon the surface of the dura mater, and may produce the same inflammation to avoid which was one of the great objects of the operation. The mere interference with the dura mater during the removal or raising of the bone may be enough to light up inflammation. Another result which occasionally, though rarely, follows trephining is well shown in these specimens. They both represent what is called hernia cerebri—the protrusion of a mass of brain-substance, mingled with products of inflammation, through the aperture in the skull. In one case the protruding mass was cut off several times, but grew again; in each case death was the final result; in neither case was the dura mater wounded during the operation, but ulceration of the membranes had taken place.

Nothing, perhaps, is of greater consequence in the question of trephining than the time which has elapsed since the injury. In almost all cases sufficient time should be allowed for the patient to recover from the mere effects of the blow; it is the persistence of symptoms after this period by which we are guided. At a much later date it may be still right to trephine, even when inflammation appears to have taken place; as, for instance, in some cases of punctured fracture.

As a rule it has happened that men who have had the largest experience in cases of injury to the head have been the least inclined to trephine, although in some parts of England, as, for instance, in Cornwall, where mine accidents afford considerable practice in these injuries, and in some of the large towns of the north, it has been the custom to operate very much more frequently than we should be inclined to do. Those who operate thus frequently are most in favour of the operation, believing that it has been the means of saving very many lives. From our own experience we should say that probably many of these would still have recovered if they had not been trephined. However this may be, such experience as theirs affords important evidence on the risks of the operation itself apart from any other injury.—*Lancet*, *August* 1, 1874, *p.* 147.

48.—ANTISEPTIC SURGERY.

By the Editor of the British and Foreign Medico-Chirurgical Review.

The present condition of the great antiseptic controversy seems to be this. The supporters of the germ-origin of surgical and medical diseases are in a decided minority. This arises mainly from a distrust of purely theoretical considerations as influencing practical treatment, until the theory upon which the latter is founded has been supported by such an array of experiment and fact, and such an accumulation of probabilities, that the induction amounts to a certainty. The germ-theory includes so much more than those diseases of the pyæmic class which are called surgical, and must seek for its proof in the study of physiology, pathology and medicine, as well as in the more elementary natural sciences which embrace an area so much wider than that with which surgeons are practically conversant, that the latter must perforce wait more or less upon the further development of the inquiries which are now actually in progress in these cognate, though increasingly divergent pursuits. The time for deciding upon the proximate cause or causes of pyæmia as of cancer was shown by the extreme divergence of opinion, and even dissonance of facts, among the most eminent speakers in the late pathological debate on these subjects, *not* to have arrived as yet. "Quot homines, tot sententiæ" may be applied here with force more than usual.

Until that time does arrive it is clear that treatment must necessarily be founded to a great extent upon surmise, and that this will vary with the theoretical proclivities of the practitioner, and to an extent quite as extreme. Among the London authorities at the debate alluded to, the germ-theory was at such a discount that not one could be found to advance it or even to allude to it. Contempt for its pretensions or the fear of the ridicule which weaker brethren might attach to it must have been the cause of reticence so unanimous. A mere uncertainty as to its truth or falsehood could hardly, in an age and a profession so pre-eminently tentative, have effected so curious a manifestation.

But there was no such cold shade over the chemical doctrine of putrefaction or other similar poisonous decomposition of the discharges or of the blood, which was spoken of and argued upon quite as freely as the necessity for the use of some such theoretical expression evidently required. Among the various ways in which those putrefactive changes and tendencies can be counteracted the use of antiseptics of various kinds (and prominent among them, of course, that of carbolic acid) has quite an even chance with any other.

But cleanliness, rest, and drainage, and ventilation and refrigeration, were far more insisted upon than antiseptics in the latest expression of opinion upon the best local treatment of wounds.

Constitutional treatment in cases where operations are imperative and immediate seems hardly to have been thought of, and the previous careful preparation of the patient for operation in such cases as admit of it, although mentioned and insisted on, is not specified in Mr. Callender's paper. Dr. Sansom's practice of the internal administration of some preparation of carbolic acid seems to have been tried by very few, although the safe saturation of the system with the antiseptic, which can be effected by means of the sulpho-carbolates, seems to be undoubted.

At King's College Hospital this method is being put upon trial in pyæmic cases by Mr. Wood, associated with the respiration of carbolised air, and irrigation with carbolised water to the wounded part. The results of experiments upon an issue so difficult to prove require, however, a long period of careful observation by many competent men before they can be thoroughly relied upon. The course of an attack of acute pyæmia is so rapid and violent in its disorganising effects, that it is probable that no remedies have much power in arresting it when once established. It would seem wisest therefore to rely upon such measures of prevention and prophylaxis as have proved in cases of typhoid and other fevers more fruitful in success than futile efforts at a so-called cure.

Quinine is a remedy which has been recommended, and may easily be combined with other plans. Of itself it has been tried frequently, even in large doses, and has failed to produce any perceptible effect upon the rigors which accompany pyæmia, and it does not seem to exert any decided antiseptic influence upon the tissues.

An important consideration in the estimate of the value of any line of treatment whatever is its universal applicability under all the varying circumstances of human disease or misfortune. The elaboration and care required by Lister's method is no doubt an obstacle to its ready acceptance, and savours of that peculiar pretentiousness which has been fatal to so many complicated systems of surgical treatment, under the experience that they were seldom necessary even if of some value. To a less extent this feeling applies to Mr. Callender's camel's-hair brush and drainage-tube also. Under the pressure of circumstances frequently exemplified in military hospitals during war, when the conditions against which they are especially directed most prevail, it is evident that they are difficult, if not impossible. Nor can we endow ordinary surgeons and dressers with Lister's or Callender's patient painstaking and prevision. Under many of these circumstances the use of Mr. Hewson's plan of dry earth might furnish its own most powerful justification. Dry clay might be obtainable when carbolic spray producers, prepared muslin, jacquinette, cere-cloth, camel's-hair brushes, and winged drainage tubes could not be procured at all or not in sufficient quantity. Alternative methods in the practice of surgery obtain often a greater value under circumstances admitting of their more ready employment, and one of the greatest endowments of the surgical mind lies in that fertility of resource and recollection which can supply an immediate eclecticism in the choice of the remedies most at hand. But this is and doubtless will remain clear that no antiseptic or other application, nor internal remedies, however valuable in themselves as an aid, will supply the want of surgical skill in arranging by the method of operation or dressing for the due drainage of the wound; or the want of foresight in the arrangement of the wards and beds; or the want of cleanliness and care in dressers and nurses; or the want of judgment in choice and in time of operating, and the manner of feeding and supporting the "vis medicatrix naturæ" which is always and must continue to be the prime factor in restoring tissues and repairing injury, and which has furnished and must still continue to supply the best or sole safeguard of the patient, when man's art, care, and skill are not forthcoming, or fail to do their part towards the sick or wounded sufferer.—*British and Foreign Medico-Chirurgical Review, July* 1874, *p.* 14.

49.—ON VARIETIES OF PSOAS ABSCESS.

By Walter Rivington, Esq., Surgeon to the London Hospital.

In cases originating from disease of the spinal column it becomes a question of interest whether the starting-point of the disease is in the vertebræ or in the intervertebral discs. Up to a comparatively recent period I believe that surgical opinion regarded "angular curvature" as almost always the result of scrofulous inflammation and caries of the bodies of the vertebræ, the intervertebral discs being regarded as the innocent victims of the disturbance and destruction arising from the errors and weakness of their osseous neighbours. But more careful pathological inquiry demonstrated the fact that the intervertebral substances were sometimes primarily at fault. There is a specimen in the London Hospital Museum (marked Fb 3) showing destruction of several intervertebral discs with but little implication of the bodies of the vertebræ; and I doubt not that most hospital collections contain illustrations of the same condition. Both Sir B. Brodie and Mr. Stanley have related cases which clearly establish the frequency with which the intervertebral discs are primarily affected; and the records of the sporadic cases which from time to time appear in the journals confirm the view. Mr. Bryant is of opinion that the disease more often commences in the intervertebral discs than in the bodies of the vertebræ. The disease of the fibro-cartilages was regarded by Mr. Stanley as of an inflammatory nature, occasioning softening, splitting of its tissue into threads, and its ultimate disappearance. A single fibro-cartilage may suffer, but the disease "often attacks several of them, and there have been instances of its occurrence through the whole series of fibro-cartilages from the second cervical vertebra to the sacrum." Mr. Stanley met with many instances of psoas abscess, some single and some double, from this cause, and often only a single fibro-cartilage diseased. "In the body of a young man," he says, "from whose thighs two psoas abscesses had been discharging, I found no trace of either psoas muscle, the place of each muscle being occupied with the cyst of a large abscess; both abscesses communicated above with a space between the bodies of the third and fourth lumbar vertebræ, resulting from the destruction of the intervening fibro-cartilage; but the adjacent bones and the rest of the fibro-cartilages were perfectly sound." We are indebted to Mr. Stanley for some other observations on this subject having a practical bearing. He has drawn attention to the fact that psoas abscess may occur without any very obvious cause, and unaccompanied by any alteration whatever in the vertebræ or intervertebral substances. He says: "I have happened to examine three such cases, in which no morbid change could be discovered in any of the vertebral structures. Although such cases are rare, the knowledge of them is important, as it instructs us not to regard a psoas abscess as sure evidence of disease of the spine." On the other hand, Sir Benjamin Brodie is very sceptical on this subject, and makes the following remarks: "In systematic works on surgery the lumbar or psoas abscess is usually described as if it were (in some instances at least) a specific disease, having its origin in the psoas muscle. But, according to all the experience which I have had of these cases, this is altogether a mistaken view of the subject. I cannot say that such an abscess never takes place in the loins, but I certainly believe that it is of very rare occurrence. In examining cases of lumbar abscess after death, I have always found caries of the vertebræ in which the abscess manifestly originated. In general the disease of the vertebræ has been so obvious that it could not have been overlooked by the most superficial observer; but in some instances the real nature of the disease has not been detected until after a careful dissection. In one instance, on examining the body of a patient who died in St. George's Hospital with an extensive suppuration in the loins, the soft parts having been entirely removed, not the smallest appearance of disease presented itself in the lumbar vertebræ, and I conceived that I had at last met with an instance of genuine psoas abscess, when almost accidentally a small opening was discovered on one side of the spine in a part which had been covered by one of the attachments of the psoas muscle just large enough to admit a common probe, and forming a communication between the cavity of the abscess and one of the intervertebral spaces. On a further dissection it was ascertained that the intervertebral cartilage had been completely destroyed by ulceration, except at the circumference, and that the opposite surfaces of the bodies of the two contiguous vertebræ were extensively carious." This case is instructive, as it shows the necessity for a very careful scrutiny both of the vertebræ and the intervertebral substances before pronouncing them to be free from disease; but we may reasonably conclude that Mr. Stanley was right in his observations of the three cases of psoas abscesses to which he refers as independent of alteration in the vertebral structures. Instances of this form of the disease have occurred in the practice of other surgeons, and it appears that psoas abscess may be the result of over-exertion and strains. Two or three cases of the kind have been met with by Mr. Bryant. In one patient the affection appeared to be dependent on a strain, which he had sustained in his right groin whilst trying to catch a cricket-ball with his right hand raised above his head. He felt hurt at the time, but went on with the game. The pain continued, and on the second day a swelling appeared in the right groin. This swelling was considered to be an enlargement of the inguinal glands. On the fifth day he was seen by Mr. Bryant. There was some enlargement of the inguinal glands; the thigh was partially flexed, and any attempt at extension caused pain. The pain was increased by pressure made deeply above Poupart's ligament. There was some constitutional disturbance. Four days later, chloroform having been administered for the purpose of relaxing the abdominal muscles, a swelling was detected in the course of the psoas muscle, and bulging of fluid in the groin was produced by pressure made firmly and deeply over the muscle. The fluid projected in the groin to the inner side of the femoral vessels. An incision was made, and about two ounces of pus were evacuated. The wound was dressed with oiled lint. No bad symptoms followed, and in three weeks the patient was well. When seen six weeks subsequently he was in excellent health.

With a view of illustrating some of the remarks which have been already made, I will here relate the chief particulars of some of the cases of psoas abscess which have come under my care at the London Hospital.

Case 1.—*Ilio-psoas Abscess, in a middle-aged man, apparently independent of spinal disease.*—A. B., forty-five years of age, anæmic and ill-nourished, was admitted into the hospital for pains supposed to be of a rheumatic character, affecting the lower part of the back, and especially in the lumbar hollow. There was no indication whatever of any disease in the spine—not the slightest irregularity or projection of the spinous processes. He could walk well and without pain. His groin was carefully examined, but there was no sign of any swelling either above or below Poupart's ligament. After the patient had been a short time in the hospital it was observed that he did not stand upright, but leaned his body forwards, inclining it to the right side and flexing the hip-joint. He was able to straighten his body when asked to do so. There was also a marked prominence of the abdomen, accompanied with, and apparently due to, an increase of the posterior lumbar hollow or lordosis. I strongly suspected that there was an abscess in the iliac fossa, and examined him for it, but I could not elicit any fluctuation or feel any tumour through the abdominal parietes. The patient declined in health, and, if I rightly recollect, succumbed to an attack of diarrhœa. At the post-mortem examination the whole of the fascial investment of the right ilio-psoas muscle was found distended with pus, and the muscle itself pale and atrophied, but not destroyed or rendered incapable of performing its functions. Careful examination of the pelvic bones and the vertebræ by Mr. McCarthy, who conducted the post-mortem, failed in detecting any disease beyond a little roughness and removal of periosteum from the anterior surface of the transverse processes of the lumbar vertebræ on the right side, such as might have arisen as well from the action of the abscess as prior to its formation. There had been no apparent cause for the abscess. The patient had enjoyed fair health, although not long previously he had been an inmate of Guy's Hospital for some affection of the back, perhaps depending on the commencement of the abscess from which he died.

An iliac or psoas abscess may be formed in constitutional conditions of a pyæmic character.

Case 2.—*Pyæmic Psoas Abscess.*—A young girl was under my care at the hospital suffering from abscess at the back of the right hip-joint. The abscess had been opened and was still discharging from an aperture near the great trochanter. In an interval between my visits to the hospital, the house-surgeon examined the sinus, and thought that he detected a piece of loose bone. When I saw the child again, a day or two afterwards, she was extremely ill. suffering from an attack of peritonitis with symptoms of a pyæmic character. Indeed, I expressed the opinion that the child had pyæmic peritonitis, probably dependent on the previous suppuration around the hip. The house-surgeon was rendering himself anxious about the case, thinking that in examining the sinus he might have explored too far, and interfered with the pelvic peritoneum in the neighbourhood of the sciatic notch. The child died, and the post-mortem examination did not corroborate the fears which had been entertained. The pelvic peritoneum was sound, nor was there a greater amount of inflammation there than in the abdominal region. The cavity of the peritoneum contained a large quantity of sero-purulent fluid, and on stripping up the peritoneum from the iliac fossa the fascial sheath of the left ilio-psoas muscle was found distended with pus. The right hip-joint was quite healthy, the sinus running behind it and in no way communicating with it.

Psoas or ilio-psoas abscess may occur from inflammation of the periosteum covering the vertebræ or the innominate bone, and also in connexion with disease of the sacro-iliac articulation.

Case 3.—About three years ago, a man fifty years of age was admitted under my care at the hospital for some obscure affection of the hip. A careful examination could detect no sign of hip-joint disease, nor any affection of the spine. There was no swelling in the groin. Indeed there were no symptoms whatever, except a complaint of pain down the thigh and disinclination to extend the limb. A long splint was applied to keep the limb extended, but the patient was extremely restless, especially at night, when he became almost delirious, threw off the splint, left his bed, and walked up and down the ward shouting and disturbing all the other patients. About a fortnight after admission, a large swelling suddenly appeared at the upper part of the thigh, extending on both sides and in front of the femoral artery, with evident fluctuation and impulse on coughing. The abscess was opened, a drainage-tube inserted, and the cavity well washed out daily with carbolic acid solution (1 in 40). A very large quantity of the most fetid pus was evacuated. The secretion continued copious day by day. A communication evidently existed with the hip-joint. Hectic supervened, and the patient died. On post-mortem examination the head of the femur was found bare in the acetabulum, and the upper part of the bone was discoloured. The cavity of the abscess extended into the abdomen, and was bounded in front by the sheath of the psoas muscle. There was no disease of the spinal column, but there was anchylosis of the right sacro-iliac articulation, and chronic periostitis of the sacrum and ilium in its neighbourhood. The specimen is in the London Hospital Museum, and shows complete bony anchylosis of the joint, and little spiculated osseous outgrowths in the iliac fossa, near the brim of the pelvis. I have little doubt that the abscess was indirectly caused by the alteration in the sacro-iliac joint. Some years previously the patient had fallen and bruised his right hip and thigh. He was laid up for several weeks, and subsequently to his recovery always retained a limp in his gait. A few months before his admission he suffered from a swelling of the right foot, which ended in abscess. It is not improbable that the anchylosis occurred after the first accident and illness, and that the immediate cause of the abscess was periostitis of the ilium brought on by exposure to cold and privation.

Case 4.—*Psoas Abscess from spinal disease in the lower lumbar region, complicated with pleurisy and pericarditis, and communicating with the hip-joint; death from exhaustion.*—J. D., aged twenty-five, came under my care early in 1873. He had then a swelling in the right groin immediately beneath Poupart's ligament, imparting an impulse on coughing, and yielding the sensation of fluctuation when pressure was made over the iliac fossa. The femoral artery ran superficially across the swelling, and was felt pulsating immediately beneath the skin and fasciæ. There was no appreciable disease of the spine. The patient could walk and even run without pain; he did not incline his trunk to the right side. The previous history given by the patient pointed to the effects of a sprain. Nine months previously he had started to run, his foot slipped, and for two or three weeks afterwards he experienced pain in his right groin. He recovered, and for some time appeared perfectly well; then he began to suffer from what he thought were rheumatic pains in his hips and numbness in his thighs; a lump appeared in his right groin. Still he could walk well and kick his right leg about without difficulty or pain. He was sent to Brighton, with a view of giving him a 'chance' of absorption of the fluid and improving his general health, and he remained there until the middle of May. He returned in much better bodily condition, but with the abscess rather increased than diminished. It had passed backwards by the side of the small trochanter, and projected in the groin below the fold of the gluteus maximus, forming a swelling there which gave a distinct impulse on coughing, and simulating an abscess or a hernia which had descended through the sciatica foramen. The thigh measured an inch more in circumference than it had done before the patient went to Brighton, and the abscess had descended much lower, reaching beyond the apex of Scarpa's triangle. On the 12th of June, about five months from the time when he first came under observation, the abscess was opened under carbolic acid spray (1 to 20). Fourteen ounces of bland and laudable pus were evacuated. Notwithstanding rigid and complete antiseptic dressing applied to the abscess with the greatest regularity for some weeks, the patient began soon to alter for the worse: hot skin, rapid pulse, anorexia, high temperature with evening exacerbations, were the evidences of hectic or remittent fever; a troublesome cough harassed him, and he wasted daily. It was hoped at first that, as there was no evidence of spinal mischief, the abscess cavity might contract and close, and this hope was strengthened by a temporary amendment which occurred in the patient's condition. The quantity of pus secreted greatly diminished in amount, the abscess cavity contracted, and the opening appeared to be on the point of closing. The appearance of improvement was not maintained; a return of all the unfavourable symptoms occurred; a fresh opening formed near the great trochanter, and not long afterwards bare bone could be felt through the opening; pain, heat, redness, and swelling became observable over the lower part of the abdomen and upper part of the thigh on the left side, threatening the development of a second abscess. The left thigh was drawn up. These symptoms subsided under treatment. New complications, however, arose. Severe pain over the heart and left side of the chest heralded an attack of pericarditis and pleurisy over a small area in the neighbourhood of the pericardium. Two distinct friction sounds were heard close together, one rapid and synchronising with the heart's action, the other deliberate and synchronising with the respirations. The formation of fresh abscesses in the axilla and over the lumbar spines followed, but notwithstanding all these complications the tenacity of life was so great that the patient lingered for several weeks longer, and died ultimately from exhaustion exactly a year within a day from the time of his first coming under observation.

The post-mortem examination, made under some difficulties at the patient's private residence, revealed the association of spinal disease with the abscess. The intervertebral fibro-cartilage between the last lumbar vertebra and the sacrum was in great measure destroyed, the last lumbar vertebra was eroded, and the upper part of the sacrum bare. Both the right and left psoas muscles were destroyed. On the right side the abscess cavity had contracted considerably, but a communication had formed with the hip-joint, destroying the articular cartilage and round ligament, and there was much thickening of the femur with superficial necrosis near the small trochanter. On the left side, the sheath of the ilio-psoas muscle was distended with pus, as far as Poupart's ligament. There was marked amyloid degeneration of the liver, and less advanced change of the same kind in the kidneys. The right lung and pleura were healthy, but the left lung was congested, and there was evidence of recent pleurisy near the pericardium, to which adhesions had been formed. The pericardium was most firmly adherent to the heart on all sides, and the heart appeared to be smaller than usual, as if diminished by the adhesion of the pericardium. There was no valvular disease. The head was not opened.

The points of interest in the case are these:—First, the position of the femoral artery, crossing superficially over the centre of the abscess at the upper part of the thigh. Secondly, the absence of any serious symptoms, either locally or constitutionally, before the abscess was opened, even though it had attained a large size. Thirdly, the failure of the efforts which we made to give the patient a chance of absorption of the abscess. Fourthly, the failure of antiseptic treatment to prevent the accession of hectic fever. Fifthly, the absence of positive evidence, up to a late period of the patient's illness, that the spine was affected. There was no deformity, and no tenderness on pressure or moderate concussion. Sixthly, the visceral complications, and the long duration of the case—eight months—after the abscess was opened. Seventhly, I may mention the apparent origin of the complaint from a sprain. The patient's father informed us that his son was one of twelve children, all healthy, and born of healthy parents. He had always enjoyed good health. He married early, and had three children at the time of his decease. His father thought his early marriage might have been injurious to him, but attached the greater importance to his fondness for bicycle riding. The complaint had supervened soon after a bicycle journey which he had made to Hertford and back. It is quite likely that the severe exertion thus undergone may have induced the abscess; and it may even be a question whether the abscess followed disease of the spine or the disease of the spine followed the abscess. The remarkable absence of all pain on concussion when the abscess was of large size, the ability to run and stand shocks, rather point to the latter alternative; and this alternative is in accordance with the undoubted after-effects of the abscess in causing necrosis of the femur and ulceration of the articular cartilages of the hip-joint. But I will not undertake to decide the point. Enough has been said to bring the main features of the disease under your notice; and when we next meet I purpose to direct your attention to the important questions of diagnosis and treatment.—*Lancet*, *Sept*. 26, 1874, *p*. 441.

ORGANS OF CIRCULATION.

50.—ON THE SURGICAL TREATMENT OF GLUTEAL ANEURISM.

By Timothy Holmes, Esq., M.A., Professor of Surgery and Pathology to the Royal College of Surgeons.

The artery affected in gluteal aneurism is usually the gluteal itself, but not unfrequently the sciatic. It is impossible, without the opportunity of dissection, to know in any case whether it is the trunk of either artery or one of its branches which is diseased, for both vessels run a very short course undivided. Nor is it by any means easy to distinguish between aneurism of the gluteal and of the sciatic, as Stevens's celebrated case shows. The internal pudic, in its short course over the spine of the ischium, may be affected, as shown by the interesting preparation (Hunterian) which I here produce from our museum. And, finally, there is a curious case reported by Dr. Hilton Fagge ("Guy's Hospital Reports," 3rd ser., vol. x., 1864), in which a gluteal aneurism was found to have been developed on an abnormal artery called "sciatico-popliteal." In this rare abnormality, of which Dr. Fagge's is only the fourth case on record, the internal iliac artery ends in a large vessel which runs down along with the sciatic nerve and becomes popliteal; while the femoral, of very small size, terminates as the anastomotica magna.

In Fischer's table of gluteal aneurisms (which, however, includes some cases of wound) thirty-five cases are recorded. Deducting one of aneurism by anastomosis and the above case of Dr. Hilton Fagge, we have thirty-three, in twenty-five of which the affection was supposed to be of the gluteal or its branches, and in six of the sciatic, while in the other two no confident opinion on this point could be formed. This table hardly shows the relative frequency of aneurism of either artery, since the diagnosis was in many cases unverified by dissection; but it seems certain that the gluteal is more frequently the seat both of disease and injury than the sciatica.

The diagnosis of gluteal aneurism has often been found to be extremely difficult. This difficulty has depended, in some cases which are classed as aneurisms, on the absence of pulsation due to the absence of a sac. The majority of these cases were not really aneurisms in any true sense of that term, but wounds or ruptures of the artery; and such cases are, of all others, the most difficult to distinguish, especially when (as frequently happens) the surgeon does not see the case till some days after, when inflammation of the integuments and superficial parts has followed the injury. He has then before him a large swelling, sometimes an enormous one, with decided fluctuation, no pulsation, and inflamed œdematous skin. Unless informed of the history of similar previous cases, he entertains no doubt as to the presence of abscess, and is shocked, on making a free incision into the supposed deep-seated collection of matter, to see a great stream of arterial blood gush out of the wound. This is the history of several of the recorded cases. But there can be no doubt that the disaster might, in some at least, have been avoided by more care in the examination. For it seems certain that in many, if not all such instances, a bruit might have been detected in some part of the tumour by careful auscultation. And even if there is no distinct arterial lesion, yet many of these great fluctuating tumours of the buttock are mere blood-tumours, which will disappear gradually with rest, if the integumental inflammation be combated by appropriate means. Hence an exploratory puncture, which in no case can do any harm, should never be neglected.

In traumatic aneurism properly so called the diagnosis has often been erroneous, and that even when the case has been under observation from the beginning; but this also has sometimes depended more on carelessness than on any real difficulty in making a correct diagnosis. Thus, in Schuh's case, a young man had received a deep wound in the buttock, from which there had been alarming hemorrhage. This was repressed, and the wound healed. After three weeks' stay in hospital, he was dismissed cured, but experienced so much pain on attempting to walk that he returned to the hospital. A fluctuating tumour was found deep in the buttock, and was opened without hesitation as an abscess. A great stream of blood spouted out, and then, after this hemorrhage had been stopped for the time, examination detected (what could certainly have been found out as well or better before) that there were both pulsation and bruit in the tumour. In fact, in the true traumatic aneurisms I should be inclined to believe that the diagnosis from abscess is easier than in some of the spontaneous, since there is the history to guide the surgeon and to lead him to a more careful examination. But I do not mean to deny the real difficulties which in some cases undoubtedly exist. Pirogoff's case is one in point, in which the inflammation of the injured parts led to the diagnosis of threatened abscess, to the application of poultices and mercurial inunction, and finally to a deep incision (but fortunately not deep enough to reach the sac) before the patient's admission into hospital. Then a deeper incision was made under Arendt's direction, but still the sac was not reached. Finally Pirogoff himself repeated the incision, penetrating to the depth of three inches, when a great stream of arterial blood enlightened him as to the nature of the disease; and now, on auscultation, he detected a low dull murmur in one or two places. The history shows how easily that which had led astray three different surgeons, two of them so eminent as Arendt and Pirogoff, might mislead any other surgeon; and it should be added that pulsation was sought for and was proved to be absent.

We see from this the great difficulty of diagnosis in some traumatic cases—those, I imagine, in which the sac is imperfect,—and therefore the absolute necessity of using every method of examination before opening a tumour of this kind.

In the spontaneous form of aneurism other sources of fallacy are added. Here, again, it may easily happen that the integuments have become inflamed either from pressure on the tumour in sitting or in moving, or from applications intended to cure the disease. Then, again, the leading symptoms of the disease are not in general those of aneurism as it occurs in other parts, but loss of motion in the limb, sometimes with persistent flexion, and sciatic pain from pressure on the nerve. Hence the presence of an abscess, either connected with sacro-iliac disease or pressure on the great sciatic nerve, first occurs to the mind of the surgeon. And even if the surgeon can satisfy himself of the presence of pulsation and bruit, it cannot be denied that pulsation often, and bruit occasionally, are found in those cancerous tumours which are not rarely connected with the pelvic bones.

Let me refer to this diagram from a case operated upon by Uhde, showing the enormous size of the tumour, the several lobes formed by an imperfect sac, and the minute opening by which it communicated with the artery. We may judge how easily such tumours might lose their pulsation from the sac giving way, and how difficult it would be, without very great care, to detect the bruit, which could only be audible close to the entrance of the arterial stream.

The best known instance of mistaken diagnosis is Guthrie's case, the preparation from which is in our museum. In this instance the tumour was taken for a gluteal aneurism by Mr. Guthrie, who saw the case first, although the tumour had not exactly the ordinary features of an aneurism. It is clear from his description that the pulsation was less strong and less expansive than that of an aneurism of so large a size ought to have been. However, there was a bruit. Being in some doubt, he requested the opinion of Sir A. Cooper, Mr. Keate, and Mr. Thomas, who examined the patient separately, leaving their written opinions with the then house-surgeon, Mr. Hancock, and all ultimately coincided in Mr. Guthrie's view, although Mr. Keate was at first more disposed to believe that the tumour was cancerous. Mr. Guthrie attempted to tie the internal iliac artery, but failed to do so, for the tumour extended so high that he could not carry his incision low enough to obtain room, and therefore secured the common iliac, though with much difficulty, and after lacerating the peritoneum in two places. The pulsation in the tumour at once ceased, and the growth temporarily diminished; but it soon became the seat of great pain, and after two months began to grow again rapidly. She died about seven months after the operation.

Mr. Guthrie published the case, had the parts drawn, and presented the preparation to this museum. Therefore it cannot be said that he tried to conceal his error of diagnosis; though, from what he says in his account, it is evident that some one had attributed some such unworthy intention to him; and the eminent opinions which he obtained in favour of the operation would quite acquit him of any blame in the matter. Yet, looking at the case by the light of the experience now acquired, we are entitled at any rate to conjecture that the diagnosis might possibly have been correctly established in spite of the delusive bruit in the tumour.

The case which furnished this preparation to the museum of St. George's Hospital (Ser. ii., 231) is in point here. The patient was under Mr. Prescott Hewett's care, with a pulsating tumour in the buttock somewhat resembling an aneurism. The absence of bruit in this case, and the fact that pressure in the course of the gluteal artery had no effect on the pulsation, rendered the diagnosis much more easy than in Mr. Guthrie's case; but the same character which is so plainly shown in Mr. Guthrie's preparation was that which in this instance ultimately decided the nature of the disease—namely, that the bones were evidently most extensively affected, so that the pulsating tumour presented on both aspects of the pelvis. It is clear, on reading Guthrie's account and looking at the preparation, that the growth had come into extensive contact with the psoas muscle. Hence, on the assumption that it was an aneurism of the gluteal artery, it must have eroded the pelvic and spinal bones to a very great extent, which would be very improbable in the case of a tumour small originally (as a spontaneous aneurism of the gluteal must be), and having so much more free an access to the soft parts externally. And now that we know how often some amount of bruit is found in these pulsatile tumours of bone, this symptom ought not to have more than its due weight in the diagnosis. Still we must not forget how often, and by what eminent surgeons, the difficulty has been experienced; and we must admit that, in the buttock as elsewhere, the distinction between an aneurism and a pulsatile malignant tumour may easily be mistaken. The latest instance occurred to the celebrated Italian surgeon Professor Porta, who tied the internal iliac artery last year for a supposed gluteal aneurism. The patient died in forty hours from peritonitis, and the disease proved to be malignant. The probability of such an error is another powerful motive for avoiding the ligature of the internal iliac if possible. In Porta's case, also, the bones were extensively affected.

It appears, then, that there are very real and very great difficulties in the way of the diagnosis of aneurisms in the buttock; depending obviously on the great depth at which they are situated, the comparatively small size of the tumour when entire, and the small size of the affected artery. But in many cases it would seem that the tumour has not been entire, but that a part has been ruptured, allowing of the sudden increase of the swelling, and the disappearance of the pulsation. This brings matters very much into the same condition as in a ruptured artery; and the same care is necessary to auscultate the part, and, in case the doubt is not thereby cleared up, to use the exploring needle. More especially should a minute and careful examination be made of the bones of the spine and pelvis, under chloroform if necessary, both from the surface of the body in front and behind and from the rectum.

Let us now see what the experience of surgeons has been in the treatment of aneurisms in the buttock considered to be of spontaneous origin.

In these cases there is at any rate no certainty whereabouts the opening of the sac may be, nor what may be the condition of the coats of the vessel at the affected part. Hence it is not to be wondered at that the treatment by Hunter's operation has been far more generally carried out.

The number of cases of so-called spontaneous gluteal aneurism in Fischer's table is 21. Of these I should be disposed to reject one (Baum's case,) which seems to have been an erectile tumour, or teleangiectasis, and to supply the one by Thomas which I previously quoted. This leaves still 21 cases, in 5 of which no treatment was adopted. Out of the other 16, 9 were treated by ligature of the internal, and 2 by ligature of the common iliac, 4 by injection of the perchloride of iron (in one of these cases compression of the aorta had been tried and failed), and in the other case cure is attributed to rest and diet, assisted by direct pressure.

If we try to form a general opinion as to the treatment of gluteal aneurism, we shall find both that in this, as in all other aneurisms, the doctrines of the surgeons of the present day vary much from those of our immediate predecessors, and also that the special difficulties of the treatment in this region give rise to much difference of opinion.

Mr. Guthrie, when lecturing on the subject of aneurism at this College, forty-five years ago, laid it down as if it were incontestable, that "in all cases of aneurism of the gluteal and sciatic arteries the internal iliac artery should be tied, instead of an operation on the part itself;" while Mr. Syme, even after a successful operation on the internal iliac for gluteal aneurism, expressed his preference for the old operation in any case in which he could be confident of finding the orifice of the sac external to the pelvis. M. Bouisson, on the other hand, is so impressed with the danger of the operation on the internal iliac, the frequency of the anomalies of that artery, and the proximity in all cases of the ligature to the large branches and to the sac, that he gives a preference to the method of Anel—*i.e.*, to the ligature of the affected artery as it reaches the tumour. Servier, again, gives the preference to the injection of the perchloride of iron; and in this he is followed by Fischer, who, after a long review of all the opinions of his predecessors, pronounces the conclusion, that "the injection of perchloride of iron must be looked on as the best treatment for gluteal aneurism."

But we must allow that every one of these measures is fraught with danger, and that some of them are very likely to be mechanically impossible. The ligature on the Hunterian principle can indeed always be carried out, but as applied to the common iliac it has never succeeded; and since the ligature of the internal has certainly, as far as present experience goes, proved less fatal than that of the common iliac, I think the latter operation should be left out of consideration, as being not indicated. But the ligature of the internal iliac artery for gluteal aneurism has hitherto proved fatal in half the cases operated on, and it is really doubtful whether in many cases of the disease the urgency of the symptoms and the danger to life are sufficient to justify so very grave a risk. We must not forget that neither this nor any other form of aneurism, when of moderate size, is insusceptible of spontaneous cure. For instance, M. Bouisson describes and figures a preparation removed from the body of an elderly woman brought to the dissecting-room, showing an old aneurism of the gluteal artery soundly cured. He relates also the case of a medical man, a patient of M. Dubrueil, who had "a voluminous aneurismal tumour, developed spontaneously in the course of the gluteal artery, which, after having acquired sufficient volume to render all its characteristics well marked, had remained stationary for many years. The patient had declined all operative interference." Again, in the case of traumatic aneurism which Mr. Syme treated by laying the sac open, he records that the wound had been received seven years before, and had resulted in the formation of a pulsating tumour, which remained during the whole period, having apparently been developed at once; but "this had occasioned little inconvenience, and rather been a subject of amusement to himself and friends until lately, when it suddenly enlarged and became the source of pain." The probability is that, if this man, instead of amusing himself and friends with so dangerous a plaything, had taken all imaginable care of himself, this rapid growth of the sac, depending, as it seems, on some partial rupture, would not have occurred. I cannot say that, for my own part, I should dissent from the decision of M. Dubrueil's medical patient; or that, except under very unusual circumstances, I should think myself justified in recommending the ligature of the internal iliac. Those circumstances I will endeavour to specify presently.

M. Bouisson, whose opinion is always entitled to the greatest respect, does not, in treating of aneurisms in the buttock, appear to me to have looked sufficiently narrowly at the various conditions in which such aneurisms may be found. And he appears to have been almost too much impressed with the dangers and difficulties of the Hunterian ligature, and with the ease with which he succeeded in securing the gluteal in an open wound. A more extended experience than was at that time perhaps attainable has shown that the operation of Anel is not always, perhaps not often possible; and that even in traumatic aneurisms the wound in the vessel may have been inside the pelvis, or possibly the wounded part of the artery may have been pushed into the pelvis by the growth of the sac. Such was the case in Schuh's patient, where, even after the sac had been laid open, it was found necessary to plunge the aneurism needle into the pelvis, embracing the nerve as well as the vessels, before the hemorrhage could be stopped. And even in Bouisson's own case, since the artery was divided close to the margin of the sciatic notch, it is hard to see how Anel's operation could have been carried out, supposing that the artery had not been at once secured and that a traumatic aneurism had formed. Again, the experience which has been obtained of ligature of the artery close to the sac of a gluteal aneurism is not very encouraging. Of three cases—Campbell's, Dugas's, and Sappey's—only one was successful, and that in a traumatic case occurring in childhood. It is, however, a feasible proposal in cases such as Sappey's, where the aneurism is situated some distance from the pelvis, and especially where, as in that case, the artery leading to it can be commanded by pressure from the skin. But the proposal should not, I think, be entertained till after the failure of milder measures. I ought not to omit that

M. Sappey himself concluded from the failure of his case that the method is not suited to sciatic aneurism, on account of the free anastomoses carried on by the branches of that artery; but the experience of only a single case seems too little to justify any general conclusion of this sort.

There is another alleged case of spontaneous cure of gluteal aneurism related by Dr. Stoker in the Transactions of the King and Queen's College of Physicians of Ireland, vol. i., 1817, p. 41. This is the case variously attributed by most writers on the subject to Crampton and Stokes. It must be admitted that this case would have been more satisfactory had there been more particulars of the symptoms and history. All that we are told is, that Mr. Richards, who was in attendance on the gentleman, a man aged thirty-four, for some chest affection (accompanied by palpitation of the heart and increased vascular action), discovered a tumour, which Dr. Stoker found on examination to be an aneurism of the gluteal artery; that the patient refused to have a consultation on the case; that Mr. Richards had previously applied a compress over the aneurism for several weeks, which had prevented its further extension, but without diminishing its size; that a light vegetable diet, with gentle laxatives, was ordered under Dr. Stoker's direction, and digitalis in pills "in such quantity as to produce a decided effect in moderating the great and general vascular action," and that then "the tumor soon began to diminish very sensibly under the continued pressure, and in less than fourteen days was entirely removed, nor has there been any return of the general or local symptoms." This was fourteen years before.

I allow that a fuller account of this case ought to have been given in order to produce a conviction of its accuracy; still there is nothing incredible in it, and, in spite of Samuel Cooper's rejection of it, it has been accepted as true by Fischer and other critics, and I am myself disposed to believe in it, Bouisson's case showing the perfect possibility of the occurrence.

The old operation, by laying open the sac and tying the vessel, is a desperate business, and in spite of the really considerable amount of success which has attended it, no prudent surgeon could contemplate it without repugnance. John Bell's description has often been reflected on as theatrical and exaggerated; but it is questionable whether it really deserves to be so regarded. The accounts left by Carmichael, Syme, and Schuh, show that even in smaller tumours than the one which Bell was dealing with, the patient runs great risk of bleeding to death, and the surgeon has need of all his dexterity and presence of mind to save him; while in Toracchi's case the operation proved impossible, the wounded artery having retracted into the pelvis. This is indeed the most formidable danger in this operation—one which was foreseen by the sagacity of Mr. Syme, though he does not seem to have known of Toracchi's case—and which should be materially weighed by any surgeon who proposes to undertake this somewhat desperate operation. In spontaneous aneurism there is probably more risk of such a catastrophe than in traumatic, but the old operation has hitherto been applied in traumatic cases. I do not know that there is any valid reason for this restriction, for the reasoning of Bouisson is here very cogent. The ligature, if placed on the internal iliac artery, is too near the sac to allow the patient the full value of Hunter's proposal, as Uhde's case conclusively proves, and if the old operation be less dangerous than the ligature of the internal iliac, there is no reason, I think, why it should not be practised in spontaneous equally as in traumatic aneurisms.

But it seems necessary to examine the tumour very carefully beforehand, in order to determine the prospect that there is of finding the artery outside the pelvis. In some cases indeed (as in that of Sappey), there is no doubt on this point: the tumour can be drawn away from the bone; and even, perhaps, as in that case, the artery leading to it can be commanded by pressure above the tumour. But when the pulsating tumour reaches up to the pelvis, it is necessary to examine the part very carefully from the rectum, or, in the female, from the rectum and vagina, in order if possible to fix the level of the mouth of the sac. Now that surgeons have ascertained the possibility of passing the whole hand into the rectum, under chloroform, without injury to the functions of the bowel, much more exact ideas on this head may be formed than were formerly possible. If any considerable part of the tumour lay within the pelvis, I would certainly not risk the old operation; although in Bigelow's case, where a part or loculus of the sac encroached on the pelvis, the orifice of the artery was outside.

This diagram, from Uhde's case of gluteal aneurism, shows how very difficult it may be to find the arterial orifice after laying the sac open. In the enormous tumour here figured, extending from the buttock below the middle of the thigh, the arterial orifice appeared at first sight as a mere pinhole, and even after drawing a coagulum out of it would only admit a probe.

I cannot but think that those who have spoken so favourably of coagulating injections in gluteal aneurism have hardly weighed very accurately the evidence of the published cases. I agree with Fischer that the evidence against coagulating injections in this disease is very untrustworthy—for too little is known of Bruns's case to enable us to judge how far the treatment was to blame for its fatal event; and in Legouest's case (related by Servier), an injudicious quantity of the solution seems to have been injected, besides that the case appears to have been in itself well nigh incurable. But then the evidence of success is equally wanting. In Campbell's case the injection failed, on a single trial it is true. In Baum's case of true aneurism (for the case of aneurism by anastomosis has no bearing on the question) it is quite evident that it failed also, and the aneurism was cured spontaneously more than two years afterwards. There remains only Nélaton's case (the one originally operated on by Sappey), and there, though the account leaves the patient in a very favourable condition, there is really no proof of definite and permanent cure.

Not that I am opposed to the trial of coagulating injections in gluteal aneurism; on the contrary, I advocate it.

We have no experience as yet of the two methods of treatment to which I am disposed to look most hopefully for the cure of these aneurisms—viz., compression of the common iliac artery (or aorta) and galvano-puncture. It is true that Legouest tried the former, and Blasius the latter; but it is only necessary to read the history of Blasius's case tô see that the application was not efficient; and Legouest's case was one which probably could not have been cured by compression under any circumstances; nor was the compression very perfectly or methodically carried out. Now, gluteal aneurism presents almost every feature which is encouraging for compression. The tumour, if the sac has not burst, is usually of no great size, it does not encroach on the abdomen, and any part of the aorta or common iliac is accessible to pressure. Surely the first step in the treatment of such a case should be to try the effect of methodical compression of the aorta or common iliac artery. If this can be done successfully without chloroform, which in a case not very acute might, I think, be possible, the patient would not be exposed to any serious danger; and we have too many histories now of aneurisms, even of large size, being cured by intermittent pressure, to deny the possibility; while, on the other hand, the history of such cases as I have referred to, in Dubrueil's and Syme's patients, proves that it is not every case of gluteal aneurism which justifies dangerous measures. If compression without chloroform is not possible, then the cure of the aneurism by total compression under chloroform should be attempted, and will in all probability be obtained in a large proportion of cases. If it fail, it may be repeated, in combination with coagulating injection, or galvano-puncture may be, and should be, tried. It is only after the failure of all these measures that the question of a capital operation occurs, and that question is no doubt a very serious one. I confess that I should be disposed to restrict the operation on the internal iliac artery to those cases in which there seem to be grave doubts whether the mouth of the aneurism is not inside the pelvis; whenever it is plainly outside that cavity I would perform Anel's operation, and if on trial this should prove impossible, I would open the sac. It must be recollected that the efficient pressure which the abdominal tourniquet now enables us to apply to the common iliac artery would rob the old operation of much of its danger.

There are only two cases of anterio-venous aneurism in the buttock on record, and in both the sciatic was the artery affected. At least this seems more probable, but there is some discrepancy between various accounts of Nélaton's case as to whether it was of the gluteal or the sciatic vessels. Nélaton's patient was cured by the injection of perchloride of iron. Riberi's derived benefit from compression, but was not cured. The example of this case of Nélaton's would encourage a surgeon to attempt the cure of this disease by injection of perchloride of iron, or perhaps by galvano-puncture with the abdominal tourniquet; but on the failure of such attempts, the old operation would be the only trustworthy method, if the symptoms were sufficiently urgent to justify the risk.

The conclusions, then, to which present experience seems to me to point in the treatment of gluteal aneurism are as follows:—

1. Gluteal aneurisms, both traumatic and spontaneous, are very favourably circumstanced for the treatment by either rapid or gradual compression, applied to the aorta or common iliac.

2. If this treatment does not succeed by itself, it may be supplemented by coagulating injection or galvano-puncture, performed while the patient is narcotised, and the circulation commanded.

3. When such treatment fails, and particularly in aneurisms with imperfect or ruptured sacs where it is not indicated, the internal iliac must be tied when the surgeon thinks that he cannot find the artery outside the pelvis. But when the artery is accessible, the old operation, or the operation of Anel, should be practised, according to the size and extent of the tumour.

4. The ligature of the internal iliac artery is liable to failure in cases of spontaneous aneurism from a diseased condition of the coats of the artery, and should always be avoided when other means of treatment are available.—*Lancet, July* 11 *and* 18, 1874, *pp.* 37, 74.

51.—ON THE SURGICAL TREATMENT OF INGUINAL AND FEMORAL ANEURISM.

By Timothy Holmes, Esq., M.A., Professor of Surgery and Pathology to the Royal College of Surgeons.

The experience of our British hospitals has been, on the whole, favourable in the treatment of this form of aneurism by cutting operations, whether in unruptured aneurisms, after the method of Hunter, applied to the external iliac artery or the femoral, or in ruptured aneurisms, by tying both ends of the vessel, after the method of Antyllus; whilst the experience of pressure, so far as it has gone, has been less favourable, and offers a very great contrast to the account given by Fischer of the cases to be found in published literature.

Two causes may be imagined for this contrast. It may either be assumed (for we have no proof either way) that our hospital patients are less tolerant of pressure or that their cases are less fitted for the treatment than those in general practice. And there is no doubt that many of our patients are irritable from drunkenness, and that in many cases they have neglected to take advice till the growth of the tumour has rendered it little amenable to compression.

But it is also possible that the method of compression may not be followed out in our hospitals with that minute care and that attention to every detail of the case which are really essential to its successful application. The treatment has not a fair chance if carried on by persons who are not responsible for its success, and who may be hardly interested in the event of the case, with just a hasty visit once or twice a day from the superintending surgeon. The compression treatment is far more laborious for the surgeon in charge of the case than the operative treatment; and I confess to a suspicion that, if hospital practice is to be carried on only by daily visits, the treatment of cases of aneurism in the lower extremity will be more successfully conducted on the Hunterian method than on that which is intended to replace it. At the same time, this accidental circumstance affords no indication of the real value of the two methods of treatment.

My own opinion, derived from an extensive search into the published records of practice and from a tolerably long experience of the results of treatment in our hospitals, is that the treatment of aneurism by operation in the latter is, on the whole, eminently successful. At the same time, I believe that this success might be even further extended if the treatment by compression, and particularly by digital pressure, were more completely and more systematically carried out than it is at present, and if hospital surgeons had sufficient confidence and sufficient interest in the method to sacrifice to it the time and attention which are necessary in order to obtain from it the best results which it is capable of giving.

I am speaking before an audience composed in great part of hospital surgeons, and they can judge whether what I say has any likelihood or importance.

Another striking fact in this table is the sharp contrast which it shows between the result of rapid and total pressure under chloroform, which as a rule has been very successful, and those of the more gradual method by instrumental or digital pressure, which, in femoral aneurism at any rate, has been very much the reverse of successful in the hands of British hospital surgeons; and this will, I think, be a convenient place to exhibit, as far as present experience enables me to do so, the results which have actually been obtained by this novel method, not only in femoral but in other forms of aneurism below the diaphragm to which it has been applied.

The very successful case of abdominal aneurism which Dr. Murray published some years ago, where a cure was effected by rapid compression of the abdominal aorta under chloroform, was such a real advance in the cure of a diseaes previously regarded as inevitably fatal, that it has led to very general imitation, and numerous similar cases have been recorded. Some surgeons have gone so far as to recommend this method of rapid pressure under chloroform applied to one of the large abdominal trunks, as superior to the more gradual method applied to the femoral artery in the groin, for the cure of femoral and popliteal aneurisms. No doubt the circulation in the thigh and leg may be powerfully, even alarmingly, affected by compression of the aorta or common iliac. This is attested by the coldness and lividity of the lower extremities which have been noticed during such compression, and which have persisted for a length of time that rendered gangrene very probable.

We are not, I think, as yet in a position to give any other than a conjectural opinion as to the desirability and the chances of success of the rapid method of pressure, applied under anæsthesia, in situations like the popliteal, where the other plans are feasible. Very few cases, indeed, have occurred in which this method has been applied to the femoral artery for the cure of popliteal aneurism; and that for the very satisfactory reason that patients can usually tolerate effectual pressure on the femoral without chloroform. But, in cases of femoral aneurism, it is often necessary, if compression is used at all, that it should be used in the form of the rapid and total compression of the external iliac, under chloroform or ether, since the patient cannot bear the amount of force required without an anæsthetic; and it is one of the most interesting and most difficult questions in the surgery of such aneurisms to determine whether this treatment is really more or less dangerous than the resort to the Hunterian operation on the external iliac artery. The number of cases which have as yet been under treatment cannot be large; and, perhaps, I have not succeeded in finding all those that have been published. It is a singular fact that all these cases are either English or American. Some cases I should have thought must have occurred on the Continent; but, if they have been recorded, I have missed them. But I will endeavour in this place to put on record those which I have met with in books, or which have been kindly communicated to me from the various hospitals, in order to exhibit, as far as I can, a correct picture of the benefits and the risks connected with this treatment. It is evident enough, from the way in which "the rapid method" is sometimes spoken of, that the few striking cases of cure which have been published have attracted more attention than the instances of failure, although great candour has been shown in putting these on record, so far as they have been deemed worthy of publication. I have previously called attention to the risks which attend the rapid method of pressure applied to the abdominal aorta—risks which, as I before explained, do not justify the surgeon in refusing to his patient the prospect of cure which this operation holds out, and which very probably are not greater than those which are inseparable from all grave surgical operations; but those risks certainly ought to be clearly known to any surgeon who proposes to undertake the operation, and deliberately weighed by him against the apparent dangers of the disease, and against the risks of any other method by which it may be treated.

A very interesting case appears to me to show the occasional utility of manipulation in aneurisms as suggested by Sir Wm. Fergusson. It was under the care of Mr. Herbert Page, in the Cumberland Infirmary at Carlisle, in the year 1872. The patient was a railway guard, aged twenty-seven, who had had syphilis, but in whom there was no known cause for the aneurism. He had been labouring under aneurism of the left femoral artery, in the upper part of Hunter's canal, for three weeks before admission; and about a fortnight after admission a similar tumour showed itself in the same situation on the other side. Instrumental compression was tried on the left side, and was well borne for a few days, but it soon became intolerable; the tumour began to grow rapidly, with great pain, and the artery was tied. All went on well on this side, except that recovery was somewhat retarded by deep-seated suppuration in the wound. During his convalescence from the ligature on the left side, the right aneurism at first almost disappeared; but in about a month it began to grow again, with much pain both in the tumour and in the leg. He could not tolerate any compression on the artery above the tumour. On Sept. 11th and 12th (the wound made for the ligature of the left artery being then all but closed), Mr. Herbert Page manipulated the tumour, with the view suggested by Mr. Oliver Pemberton's Address in Surgery at the British Medical Association about that time—viz., "to alter the relations of the laminated fibrin in the cavity of the aneurism, so as to bring about a further deposition of fibrin on the projecting surfaces of the displaced laminæ." The pain in the swelling and in the leg was evidently severe. He could not sleep at night; and on Sept. 14th could hardly bear to be touched, the parts were so tender. However, next day (Sept. 15th) it was noted that there was no pulsation, and that the pain had gone; but some circulation seemed still going on through the tumour, since it diminished in size on compression of the artery, and increased again when the circulation was restored. From this time the tumour kept on diminishing in size and increasing in solidity; and in sixteen days from the time of manipulation the man was well enough to go out in a Bath-chair. He was discharged on Oct. 2nd, there being then a small, hard nodule, the remains of the aneurisms, in each thigh. But when seen again in December no trace of either tumour could be detected on the most careful examination.

It is certainly open to anyone to contend that this was a case of spontaneous cure; but as the aneurism was increasing rapidly up to the date of the manipulations, as those manipulations produced a most decided effect, and as they were followed by the precise train of phenomena which were sought to be obtained and which led immediately to the consolidation of the aneurism, I have no hesitation myself in regarding this as a case of cure by manipulation; and I may say that, having shown the notes to Sir W. Fergusson, he is of the same opinion.

One of the most interesting cases of aneurism of the external iliac on record is that which was published in Mr. Oliver Pemberton's Address in Surgery, to illustrate the use of direct pressure in the cure of aneurism. The patient was a healthy active man, aged sixty-seven, who had an aneurism of recent formation just above Poupart's ligament. Seeing the danger of a ligature to the common iliac, which was at that time (1859) the only known alternative, Mr. Pemberton tried the effect of pressure on the artery above, but found that this did not arrest the circulation, which, however, he noticed was much retarded by pressure on the sac itself. Accordingly, Carte's compressor was carefully applied to the sac itself, under the management of two senior students, with only sufficient force to retard the circulation, and for not more than three or four hours at a time—an average of about seven hours a day. For a fortnight no good was done. During the next eight days a good deal of coagulation was procured. He was then allowed a rest of nine days, and permitted to move about the room. Then followed nine days of treatment, averaging six and a half hours a day; and from that time the aneurism ceased to pulsate. When

Mr. Pemberton published his Address the man was still alive, active, and well, at the age of eighty-three. The remains of the aneurism were represented by an indurated enlargement the size of a chestnut.

With this I would connect an interesting case of which Mr. Gant has shown me the notes. The patient was very old (seventy-five), with a recent aneurism in the groin, the result of a fall. Pressure above being impossible and ligature hopeless, a Carte's tourniquet was adjusted just below the aneurism, and applied for about two hours daily during about ten weeks. This caused much pain, extending also to the aneurism; but the latter decreased in size and pulsation, and became practically cured. He was seen six months afterwards, the tumour being then very small, with some pulsation, but not of an expansive character.

Arterio-venous aneurism of the femoral artery and vein is not, on the whole, an exceedingly uncommon affection; at least, there are a good many examples on record, spontaneous as well as traumatic, though the latter are, of course, by far the most numerous. Our own museum contains a splendid specimen of this disease, which was given to it by Mr. Beaumont, of Canada (No. 1570 C), and the very interesting history of which is contained in the Medical Times and Gazette of July 17th, 1867. It is well worthy of deliberate study as containing many very singular features, but time does not permit me to dwell on them fully. Suffice it to say that the communication between the artery and vein would seem to have persisted for ten years and a half (after a wound followed by very alarming hemorrhage) before any tumour formed; and the evidence of this was that during the whole of that period the peculiar bruit had been audible, not only to the patient, but to those about him. The cause was a stab received in a quarrel, and the bleeding had been so severe that for two days the patient was near to death. It was only after this long period of abeyance that an aneurismal sac seems to have formed in consequence of some strain while on horseback, which probably caused the giving way of the weakened portion of the arterial wall. The patient died under the influence of chloroform, administered with a view to the ligature of the external iliac artery, and this operation was rendered necessary by the rapid growth of the tumour. Yet, as Mr. Beaumont remarks, the state of parts which the dissection reveals renders it very improbable that the operation could have succeeded, for the superficial femoral vein is altogether blocked above and below the communication with the artery, and the profunda artery and vein are so far compressed by the tumour that they could transmit little if any blood. Besides, in this, as in most cases of arterio-venous aneurism, the artery above the tumour is weakened, dilated, and thrown into curves, so that here the external iliac measured five inches in length. The same was the case in Mr. Perry's patient, where the external iliac was so folded on itself as to form a pulsating tumour, and give rise to the suspicion of another aneurism there. Hence, if the operation had been completed, it seems certain that the patient must have succumbed either to secondary hemorrhage or to gangrene. Otherwise the obliteration of the femoral vein above and below the opening would in itself have been a favourable feature in the case, reducing the arterio-venous aneurism more nearly to the conditions of an ordinary arterial aneurism. Yet it may be doubted, from the notes of the case, how far this obstruction could have been perfect during life, since the venous murmur and thrill seem to have been perceptible to the end.

Before quitting this case, let me remark on two of its features. One is that in this, as in Mr. Perry's case of arterio-venous aneurism in the thigh, the sac was ossified. This may be a matter more of curiosity than of practical interest. But it is certainly important in a practical point of view to note that, with the femoral vein occupied by coagula, and with the profunda vein so compressed as hardly to transmit any blood, the anastomosing veins, with the saphena, had so completely carried on the circulation, that there was not only no gangrenil, but no œdema of the limb. Surely this is a fact not to be overlooked in considering the propriety, in circumstances otherwise desperate, of tying up the artery and the vein together in operations for arterio-venous aneurism.

There are many other cases of arterio-venous aneurism in the thigh to which I should like, if time permitted it, to call your attention in detail. One of the leading cases in this particular is Perry's, where, without any known cause, an arterio-venous aneurism formed in the thigh of a middle-aged man who had been suffering from an aneurism at the bifurcation of the popliteal artery of the same side for about two years. I shall presently dwell on some of the interesting features of this case, which, however, will well repay a more careful study.

But of all cases which are reported in surgical literature, the one which is most interesting and which leads to the widest speculations as to the pathology and treatment of aneurism, is Mr. Oliver Pemberton's. In that case the patient had suffered from spontaneous aneurism of the posterior tibial artery, in itself a rare event. This had been cured by the use of compression by means of a tourniquet to the femoral artery in the groin, continued at intervals for nine months, and sometimes applied with considerable severity, till the patient could bear it no longer. The femoral artery on both sides, it should be noticed, had been observed beforehand to be "hard and cordlike." Nine or ten months after the cure of this aneurism, an arterio-venous aneurism showed itself in the groin, at the seat of pressure, and this went on increasing till his death, which occurred twenty months afterwards, as the result of dropsy dependent on disease of the heart and liver. During this time the disease had made progress, the veins had become large and tortuous, and the extremity much enlarged. It was evidently the condition of the viscera which forbade the attempt at any cure of the disease, and doubtless in this case such contra-indication was complete.

I am embarrassed by the numerous points of interest which this well-known case comprises, and which have reference, first, to the pathology of the disease; secondly, to its diagnosis; and, thirdly, to its treatment. I had better, perhaps, leave aside the first point to be treated hereafter, when we come to talk about the possible ill-consequences of compression applied for a long time to arteries not perfectly healthy. I quite admit the possibility, even the probability, of Mr. Pemberton's supposition, that the communication between the artery and the vein in this case arose in consequence of some chronic action in the walls of the artery set up by the long-continued pressure, though neither the author nor anyone else could say that such a cause has been proved, especially when we consider the many points of resemblance which Perry's case, indubitably spontaneous, bears to this. As to the diagnosis, I must limit myself to saying that it was clearly and correctly established by noticing the continuous harsh murmur, "like the ceaseless rushing movements of the steam forge-hammer," and "so harsh that it becomes acutely disagreeable, to retain the stethoscope for more than a few moments," which was traceable from one special point of the tumour, and by the enlargement of all the veins leading to that point from above and below. It would have been useless to speak of treatment in a case like this, where the patient was dying of visceral disease, and where the aneurismal tumour was really only a subordinate part of his sufferings. But none the less is the case very instructive, especially taken in connexion with Mr. Perry's, in showing at any rate what ought to be avoided. In both there was a small tumour, causing much venous enlargement and œdema, and a remarkable dilatation, thinning, and elongation of the artery above its point of communication with the vein—a circumstance which has been often noticed in arterio-venous aneurism.

I think the obvious inferences derived from a study of these and other similar cases would be two.

First. That the treatment must be directed to obliterate the orifice of communication between the artery and the vein. It is from this communication that all the secondary consequences of the affection seem to proceed—viz., varicosity of the veins, degeneration of the artery, œdema, pain, and loss of the functions of the limb. This communication may be obliterated in three ways: —1. By laying the sac open, and tying the artery above and below the wound. When this has been done the surgeon may use his own judgment as to tying the vein also. 2. By tying the artery above and below outside the sac. 3. By compression applied to the venous orifice and to the artery above the tumour. This is best done simultaneously after Vanzetti's method. But cases have been successfully treated by first compressing the venous orifice until the latter has been obstructed by coagula; the arterio-venous is thus converted into a simple arterial aneurism, which is afterwards treated in the usual manner.

Secondly. All cases which have been dissected at a late stage of the disease prove that the artery becomes so attenuated and enlarged above the tumour that no operative interference can then be successful. Hence the necessity for treating the disease decisively at first, and for abandoning operative interference if the case is not seen sufficiently early.

On a review of the whole subject of femoral aneurism by the light of our present experience, the following are the main conclusions to which Professor Holmes is led:—

1. That the operation of ligature of the external iliac artery has been, on the whole, fairly successful, as evidenced by a very small mortality in uncomplicated cases of hemorrhage and a mortality of about one-fourth in published cases of aneurism—a conclusion supported by the unpublished records of hospital practice, though a few cases of recurrence of the aneurism have occurred.
2. That the operation on the superficial femoral, for aneurism situated in Hunter's canal, is a very successful operation.
3. That the ligature of the common femoral is a perfectly justifiable proceeding; though whether more or less trustworthy than that of the external iliac artery we are not as yet in a position to judge.
4. That ruptured aneurism in the thigh has been treated with a large amount of success by the old operation.
5. That ilio-femoral and femoral aneurisms have been treated with a very fair proportion of cures in the few instances on record by rapid compression applied to the aorta or common iliac, but that there is no evidence to show that this treatment is less dangerous or more successful than the operation on the external iliac artery, when the latter is feasible.
6. That compression, especially digital pressure, has been applied to the treatment of inguinal and femoral aneurism with striking success, though in what proportion of cases we do not as yet know. That the comparative ill-success of this method in our hospital practice is more calculated to raise doubts of the efficiency of the application than of the soundness of the method itself.
7. That in rare cases direct pressure or even manipulation may be advantageous.
8. That arterio-venous femoral aneurism should be treated by double compression, applied to the vein and artery; which failing, Mr. Spence's method of tying the artery above and below is the most hopeful measure; and when this is impracticable, either the old operation should be preferred or the case abandoned.
9. That spontaneous aneurisms of the profunda have been diagnosed and successfully treated by compression.
10. That recent traumatic aneurisms of branches of the external iliac or femoral are best treated as wounds of these vessels—*i.e.*, either by compression or by ligature at the wounded part.—*Lancet, Oct.* 10, 1874, *p.* 507, and *Medical Times and Gazette, July* 11, 1874, *p.* 32.

52.—ON THE TREATMENT OF POPLITEAL ANEURISM.

By TIMOTHY HOLMES, Esq., M.A., Professor of Surgery and Pathology to the Royal College of Surgeons.

The Professor commenced his remarks on the surgical treatment of popliteal aneurism by repeating the observations which he formerly made on other kinds of aneurism as to the great importance of the composition of the sac.

1. It is delusive to expect that equally mild measures will succeed in a rapidly growing aneurism when the sac is thin and probably imperfect—as in one in which the sac contains a considerable proportion of the firm, elastic tissue derived either from the expanded arterial wall or from well-formed and con-

solidated areolar membrane. At an early period of the formation of an aneurism resulting from injury, we see very clearly the slight resistance which the surrounding tissues will oppose to its increase—allowing that the rupture of the coats is complete,—as contrasted with the difficulty experienced by the artery in the manufacture of the aneurismal sac when only a portion of the coats has given way. This difference is clearly pointed out by John Hunter in his remarks on the preparations of traumatic popliteal aneurism (No. 1571 in the Hunterian Museum). Hunter says—"Here was a case where there was every external appearance of an aneurism, such as a circumscribed swelling with a pulsation. This was what would be called or understood by a spurious aneurism, but it was properly a rupture of the coats of the artery, and which I do imagine is only to be distinguished from the aneurism or dilitation by the time it takes in coming to its ultimate size—viz., from its first appearance to its threatening destruction to the parts beyond, as a limb, or destruction in the surrounding parts in which it is placed—threatens, viz., mortification and bursting; an aneurism being as many months in coming to this ultimate as this disease was days; for in aneurism, although the artery gives way at last, and then its coats are principally composed of the condensed cellular membrane (as in this case), yet it is strong, owing to the time it has had to thicken and form a coat while the artery was dilating."

The difference pointed out by Hunter, and inferred by him from this pathological specimen, is often very clearly marked in practice. It is true that in cases of extensive or total laceration of the wall of an artery no sac is usually formed. The blood is extravasated into the cellular membranes, but there is no pulsation —and in these cases there will most likely be no aneurism at all,—the blood extends indefinitely, the limb will mortify, and amputation must be performed. Such cases may be likened to those of extravasation of urine from free rupture of the urethra, infiltrating the areolar tissue to an indefinite distance.

But there are other cases, more like those of perineal abscess following on a slight ulceration of a portion of the urethra behind a stricture where there is a small laceration of all the coats of the vessel and a limited quantity of blood is extravasated. In these cases a sac is formed sometimes with amazing rapidity, and grows as rapidly as it forms. A most interesting example is one published by Mr. G. E. Walker, of Liverpool, in the Liverpool Medical and Surgical Reports, vol. v. There are many somewhat similar cases which show the failure of pressure, or the great difficulty in bringing it to a successful issue in cases of traumatic aneurism, or of aneurism following partial rupture of an artery, where the sac is very thin or imperfect. It appears to Mr. Holmes that both theoretical and practical considerations point to the conclusion that for the speedy and secure consolidation of an aneurism the concurrence of the contracting action of the sac is almost as important as the coagulation of the blood within it. And if this be so, it accounts for the great difficulty in procuring a stable cure by any method such as galvano-puncture, which is intended to act upon the blood alone—and still more so by the introduction of foreign bodies into the tumour, with which they may consolidate the blood; these must certainly irritate and soften to some extent the tissues of the sac.

2. Besides the differences which exist between one aneurism and another in respect to the composition of the sac, there is a very important difference in popliteal aneurism in respect of its position—*i.e.*, whether the orifice of the aneurism is on the deep face of the artery, and the tumour grows towards the knee-joint, lifting up the vessel; or, on the other hand, is situated at the back of the artery, growing towards the vein, the nerve, and the skin; or laterally; or is of the fusiform or tubular variety, in which case it often extends up Hunter's canal and becomes femoro-popliteal.

It is quite evident that such differences in form and in anatomical relations must powerfully influence both the course of the symptoms and the effect of treatment. For instance, the aneurisms which grow towards the knee-joint must produce more difficulty and stiffness in the motions of the knee; they must be more liable to be accompanied by synovial effusion, and sometimes by more serious disintegration of the joint; they must threaten more speedy rupture into the cavity of the joint; and probably are less under the influence of genuflexion, which also must be attended with more risk of rupturing the sac. Aneurisms which grow forwards from the anterior or deep aspect of the artery are exposed to two grave complications—(1) they may grow into, erode, and irritate the bone (*vide* Tufnell's work), or (2) they may press upon the posterior ligament of the joint. In the former case they may burst after attaining a very small size; for in such cases it is clear that the pressure exercised by the tumour on the bone is reflected back upon its sac, causing it to soften and give way. In the second case, synovitis is apt to be an early complication, and the aneurism may suddenly burst into the cavity of the knee, as in Mr. Moore's case reported in the British Medical Journal, 1859.

3. Again, the form of the aneurism has much influence on its curability. Those tumours which communicate with the artery by a definite orifice, from which the sac stands out as a bud, are far more curable by gradual or partial compression; and in flexion it is quite possible that their orifice may be obstructed by displacing clot, leading to a rapid cure, though flexion may probably succeed by displacing the clot in any form of aneurism. The quantity of clot also in the sac when the patient is first seen, furnishes an important indication of the probable success of the milder methods of treatment.

4. Another practical consideration of the highest moment is the progress of the case while under observation, or in other words, the rate at which the symptoms are advancing. This rate depends in part, no doubt, on the particulars above alluded to—*i.e.*, on the composition of the sac, on the position of the tumour, and on the nature of its orifice; but also on many other circumstances of which no general statement is possible; such as the precise exciting cause of the aneurism, the minute anatomy of the affected artery, the patient's own habits or conduct, and all those individual peculiarities which are comprised under the vague term of his "constitution"—peculiarities which it is impossible to foresee, or even in most cases to explain, but which exercise so real and so vital an influence in the progress of aneurisms, not only when they occur in different persons, but also when they occur in the same person at different times. Anyhow it must be admitted that cases of popliteal aneurism display great variety in their progress: in some cases a few days' rest and quiet is all that has been necessary; in others, the surgeon must act at once and decisively, or serious if not fatal mischief will ensue.

5. The next important practical difference between different cases consists in the presence or absence of other diseases, of which cardiac mischief, perceptible atheroma, or ossification of the affected or other arteries, and renal diseases, are those which first occur to the surgeon's mind.

Now, all these facts can usually be judged of in popliteal aneurism with some approach to certainty. When the artery crosses the back of the aneurism, it can be traced by a line of pulsation distinct from the general heaving of the aneurism, and particularly recognisable when blood is re-admitted after temporary compression of the femoral. When the tumour grows more or less directly backwards, its position may be inferred from the absence of the above symptoms, from the considerable œdema, and from the early existence of pain in the course of the nerve. The tumour may, however, lap round the artery, as in a case in St. Thomas's Hospital.

It is more difficult to judge of the condition of the orifice of the tumour. A very common state of parts in aneurism is that in which the tumour, originating from one definite portion of the vessel, which has given way from disease or injury, overlaps the artery for some distance, so that a certain portion of healthy artery above and below the orifice is enveloped in the sac of the aneurism. But it is equally common, taking all aneurisms together, to have an arrangement more resembling that of fusiform dilatation—there being two openings of the artery into and out of a more or less tubular sac. This arrangement, however, seems to Professor Holmes (judging from memory rather than from given data) to be less common than the others in popliteal aneurism. It is more common in the larger arteries than in smaller ones, and is less likely to occur in the ham, since aneurisms here seem so frequently to depend on partial rupture of the artery at a certain spot, while the tubular aneurism originates in degeneration of a considerable part of the vessel. The physical diagnosis must rest on the character of the bruit, on the shape of the tumour, and on the nature of its expansion. The phenomena observed when the tumour is as far as possible emptied, after compression of the artery above, and the blood then re-admitted, enable the surgeon to judge more or less certainly of the strength of the sac in various parts, of the amount of coagulum contained in it, and of the position of its orifice.

The first step, then, in the treatment of popliteal aneurism is to ascertain as accurately as may be these particulars with regard to the case in hand, and to base upon them the important choice of the method to be first adopted. The choice between the ligature and some form of pressure (including genuflexion amongst the latter) will rest chiefly upon the presence or absence of a thick, well-formed sac, lined with some amount of coagulum; on the judgment of the surgeon as to the relations of the sac to its orifice; on the acute or chronic nature of the symptoms; and on the presence or absence of disease of the heart, arteries, or kidneys. The most promising cases for compression are those with a thick sac and a certain amount of fibrine deposited, without urgent symptoms or rapid advance, and where the characters of the bruit and of the pulsation point to the conclusion that the aneurism is not fusiform. And in these cases where the presence of other general complications render the surgeon anxious to avoid the risks attending a serious operation, compression has very often succeeded; but many cases of successful ligature of the femoral artery have occurred in patients suffering from cardiac or renal affections, or with aneurisms in other parts.

If compression does not succeed at first, how long should it be persevered with? This question can only be answered in very general terms. Considering the distress and disappointment, and sometimes acute suffering, to the patient of prolonged compression; considering, too, that experience up to the present time points to the conclusion that a patient is not more, but less likely to recover from ligature of the femoral if a prolonged application of pressure has previously been made; and if it can be shown that the Hunterian operation is much less dangerous than we have been taught to regard it, judging only from the experience of a former generation, recorded by Norris and other statistical writers,—it would be better to abandon the compression treatment after a careful, but very moderate, trial if it does not seem to be doing good, and then to resort to the ligature before the patient's chance of recovery from that operation has been permanently impaired. As to how long a time is implied by "a very moderate trial," that must be decided by the individual cases, but Mr. Holmes's own opinion is that more harm than good generally results from protracting the attempt beyond a week.

The results of each form of treatment as applied to popliteal aneurism are by no means easy to ascertain or to compare with each other. The comparison which is made between compression and the ligature is based upon statistics which, as applied to the latter, are composed mainly of cases operated on long ago, when the success of surgical operations was much less than it is at present. Reliable statistics of the compression treatment are very hard to procure; published cases afford no fair test of the average success of so common a proceeding, since they are recorded mostly on account of something unusual in their course. Hospital cases, if the records are complete, afford a better criterion of success obtained, but are open to the objection that better results might be obtained, if more minute attention were given to the cases than hospital arrangements provide. The records of hospital practice probably do not show all that might be done, therefore, by the method. Then, again, some of the most promising methods of compression are as yet new, while the rapid method under chloroform is almost untried in popliteal aneurism.

Again, we must remember, on the one hand, that compression is applied to milder cases than those which are subject to the ligature; and, on the other, that the treatment by compression is not yet perfected, but is still being developed and improved. Still, the experience of surgeons in the past will be found to give no uncertain indication of the direction in which improvements in the treatment of this disease are to be sought. The Hunterian operation was eagerly adopted in cases which, up to the time of its introduction, no one had ever thought accessible to surgical operations at all. It was not merely successful in curing popliteal aneurism—which was at that time a most fatal disease, rarely cured by any means short of amputation,—but it also gave a new impetus to the study of the arteries and their diseases, and thus, by showing that some amount of circulation was not incompatible with the cure of aneurism, it laid the foundation for the introduction of that treatment by compression, which has since, but very wrongly, been sometimes looked upon as a rival or enemy of the ligature. Certainly John Hunter did not so regard it, for after having tied the femoral twice, he attempted the cure by compression in his third patient, and only tied the artery on the failure of that attempt

Hunter himself only operated on five occasions; and although the operation was in its infancy, and as he at first took no care to exclude the vein, and tied the artery in a position where it is not very easily accessible; still only one case died. There can be no doubt that this fortunate result did much to insure the reception of the method into practice. Judging of the success of the operation from statistics published by Norris and by Porta, the mortality is about one-fourth; from statistics drawn from the London hospitals by Mr. Hutchinson, the mortality appears to be one-third; while the experience of individual operators who had enjoyed exceptional experience in the treatment of aneurism was said to have been far more favourable than this.

Professor Holmes has attempted to discover what the mortality of this operation has been in our hospitals (both metropolitan and others) of late years, and he finds it much less than is represented by the tables of Norris and Porta; and this he attributes to a concurrence of causes, mainly perhaps to the earlier treatment of cases by surgical operations since the introduction of anæsthetics, but also to improved methods of operating, and improved knowledge of anatomy and surgery. This mortality is neither one-third nor one-fourth, but one-seventh, including several cases in which death occurred from causes quite unconnected with the operation. Nor are the London any worse than the country hospitals.

These remarks refer to cases of ligature of the femoral artery at once, uncomplicated by any previous pressure or other treatment.

In the table, exhibited by the Professor, of the results of treatment of aneurisms in our British hospitals, there are 212 cases of popliteal aneurism, and they furnish examples of every variety of treatment. In 77 cases the femoral was tied without any previous trial of compression, and of these 11 died.

In one of the fatal cases, however, the death was occasioned by small-pox. To these unfavourable cases those should be added in which the operation failed to cure the disease: these were only three, viz., one in which the old operation was performed subsequently with success, and two in which amputation was successfully performed. Thus, of the whole 77 operations, the failures were only 14, or at most 15, and out of these three were cured subsequently—so that the largest ratio of failures which can be ascribed to the Hunterian operation would be only 19.48 per cent.; and it should be recollected that this includes one-fifth of cases in which, though the operation itself failed, the patient survived, and was cured otherwise. These are the miscellaneous results of practice, on a collection of all the cases, published and unpublished, which occurred in the hospitals referred to, and the table represents the average results of practice as far as the numbers go; and these numbers are large enough to show the truth of the argument. In Norris's table, the operation proved fatal in 24.46 per cent. In Professor Holmes's table, gangrene occurs at most four times only out of 87 cases, and proved fatal in two or three; while in Norris's table (containing twice as many cases) it occurs 31 times, and proved fatal in at least 23 cases.

In the hospital table, again, there is an absence of any fatal case of suppuration of the sac; but in Norris's there are six deaths from this cause, besides ten cases in which recovery took place. Pretty nearly the same observations apply to secondary hemorrhage. It was the cause of death, directly or indirectly, in three of the fatal cases, and its occurrence is noted in one which recovered. In Norris's table it occurred in twelve fatal cases, and in the same number of cases which recovered. Hence it seems that ligature of the femoral has become much more successful than it used to be down to the time of Norris's table, published in 1849; and as applied to the treatment of popliteal aneurism, it is really much more successful than the researches of previous writers have led us to believe, and perhaps has become more successful than it used to be.

In commencing the discussion as to the relative merits of compression, and the other bloodless methods of treating popliteal aneurism, it must be stated that we have in the Hunterian operation a method which almost always succeeds if the patient recovers from the operation, and which may be expected confidently to be followed by recovery in the very large majority of cases, especially if the dissection be skilfully and carefully conducted, so as to avoid all violence to the vein, and all unnecessary exposure or contusion of the artery.

The results of the treatment by compression, in all its forms, as shown by the hospital table, are as follows:—Compression was tried with success in sixty-six cases, and in fifty-eight without success. The most interesting questions in this record of experience are those which refer to the frequency of the failure of compression—to the effect which compression may have, if it fails, on the future progress of the case, and to the form of pressure which it is best to employ.

Professor Holmes addressed himself to these matters in their order:—

First, as to the frequency of failure. It seems discouraging, at first sight, that pressure should have failed fifty-eight out of 124 times. But these cases go back a long way in the history of compression, and many of them were under the care of surgeons who were by no means favourable to the use of pressure, and had no experience of the way of carrying it out. Then in hospital practice many little details, which in private receive the attention of the surgeon himself, are confided to the students and dressers, or to nurses. Besides, the great majority of these cases were treated by instrumental compression, and it is beyond all question that digital pressure is in every way superior.

Yet even if we allow that failure must continue to occur in half the cases so treated, we ought not to be discouraged from the use of pressure, however successful the ligature may be, unless there is some great reason for believing that it will spoil the prospects of the successful treatment of the case afterwards. For the application of pressure in favourable cases certainly exposes the patient to no risks, while the ligature of the femoral artery does. The only case in which death occurred while the patient was under treatment was one in which pleurisy accidentally supervened. But there can be no doubt that in this, as in other methods of treatment, disasters will occur. Thus, there are eight cases in which amputation became necessary from gangrene, rupture, or suppuration of the sac; of these five died, and three recovered.

Nor must the fact be lost sight of that in some cases instrumental compression, and also digital pressure, when ill or carelessly applied, may produce gangrene by obstructing the vein, while either of these methods, if it does not cure, may easily aggravate the disease; and, finally, genuflexion has dangers of its own which lead to rupture of the sac, and sometimes to gangrene of the integuments which cover it. So that in a small proportion of cases, pressure has certainly spoilt the case so completely as to render amputation necessary. There are, too, cases in which pressure produces a direct effect on the artery, and some in which the tissues around the artery are much thickened and consolidated, so that the tissues above and around the vessel are brawny, the artery and vein closely connected together, and the walls of the artery thickened and hardened at the seat of pressure. All experience and authority lead to the conclusion that direct pressure on the structure of the vessels on which the force acts produces no visible or tangible anatomical lesions; but this position can hardly now be sustained, for every one is agreed that the action of long-continued compression is often plainly perceptible on the cellular tissue which supports and unites the vessels.

The results of compression are probably susceptible of much improvement, but nevertheless are yet satisfactory as far as they go.—*Med. Times and Gazette, Aug.* 8, 1874, *p.* 141.

53.—THE TREATMENT OF ANEURISM OF THE ARCH OF THE AORTA BY GALVANO-PUNCTURE.

By Dr. McCall Anderson, [Professor of Medicine in Anderson's University, and Physician to the Royal Infirmary, Glasgow.

[The following, taken from a long article upon this subject, expresses Dr. McCall Anderson's experience of the best method of procedure in the treatment of aneurism by electrolysis.]

The kind of battery to be used is not of very much importance; the principal thing is to see that it is in good order. I prefer Stöhrer's battery, being accustomed to it, and perhaps it is better to use one the cells of which are large. As to the strength of the current, I am inclined to believe that, in some cases at all events, the want of success has been due in great measure to using it too strong, and that it is much better to employ a weak current, and, if necessary, to continue the operation for a longer period of time. The needles to be used should be sharp and not too coarse, and that portion which penetrates the skin, the walls of the sac, and the intervening tissues should be insulated with vulcanite. They should be oiled before being introduced. In the majority of instances one needle is sufficient, but sometimes, especially in the case of large aneurisms, two or more may be necessary. There is much difference of opinion as to how the needles should be connected with the battery. I prefer connecting them with the positive pole. In this respect I differ from Dr. Althaus, who says: "From the results of the foregoing cases, I have no doubt whatever that the most effective application of the current is that when both poles are inserted into the sac. This mode of application is also that employed by Ciniselli and Dr. Duncan of Edinburgh. Both poles are useful in different ways. The positive produces a small firm clot, and the negative a large soft one. When only one pole is in the sac the resistance encountered by the electricity is so great that a much larger galvanic power has to be used to produce any effect at all, and even then the effect of that pole which remains outside is lost." And yet it is a very curious circumstance that one of the most successful cases recorded in Dr. Althaus' book is the one which I have last detailed to you, in which the needle was connected with the positive pole alone, and a very weak current was employed. I prefer connecting the battery with the positive pole because the clot which forms at the positive is much firmer than that which forms at the negative, and because there is less danger of hemorrhage. This is well illustrated in the first case which I brought under your notice to-day, and also in several of the cases related in Dr. Althaus' book. The hemorrhage is objectionable because, besides being an unpleasant complication, it alarms the patient and is calculated to excite the circulation, and because it is a proof that the coagulation at the negative pole is of a very unsatisfactory character. To sum up, then, although further experience on my own part and upon that of others may tend to modify my opinions on the subject, I am in favour of using a battery with large cells, of employing a weak current, of using one or more needles, insulated with vulcanite at that part which penetrates the skin and walls of the sac, and of connecting these needles in every case with the positive pole of the battery.—*Lancet, June* 20, 1874, *p.* 864.

54.—CASES OF HEMORRHAGE FROM THE PALM OF THE HAND, TREATED BY PRESSURE.

By E. L. Hussey, Esq., Senior Surgeon to the Radcliffe Infirmary, Oxford.

Case 1.—A farm labourer, forty-eight years of age, living at Dorchester, about nine miles from Oxford, was admitted into the Radcliffe Infirmary under my care on September 11, 1868, on account of sudden and profuse loss of blood from a swelling in the palm of the left hand.

History.—The man is left handed. About seven years ago, after some hard work, he found a swelling in the palm of his left hand. As it continued to increase in size, he showed it at different times to Mr. Byass, of Dorchester, and his assistants. They informed him of the serious nature of the case, and of the necessity for treatment, telling him that he might some day bleed to death from it. Mr. Byass mentioned to me in conversation that he had such a case under observation. About twelve months ago the swelling was punctured by a practitioner in the neighbourhood; some slight flow of blood followed the puncture. The wound healed favourably, but the swelling grew more rapidly in size afterwards. The patient described it as becoming raised, and even pendulous; the apex of the swelling became softer. His fingers became permanently flexed, and he had a difficulty in opening the hand enough to hold his tools for work in the fields.

On the morning of admission, after fomenting the hand with flannel and warm water, he tried to straighten the fingers forcibly. The swelling burst, and before he could obtain help, he lost, by his own estimate, about three quarts of bright florid blood. The friends about him tied a cord round his arm, and sent for Mr. Byass. Mr. Harris, Mr. Byass's assistant, who was well acquainted with the nature of the case, attended at once. A thick compress of lint was placed in the palm, and a bandage applied round the hand and wrist, and a tourniquet buckled on the arm above the elbow, with the pad over the brachial artery. The patient was then sent in a cart to the Infirmary. Upon admission he was sent to bed, with his hand and arm raised on a pillow.

The next day I saw him. Upon examining the patient, and hearing the history, I formed the opinion that the swelling was an aneurism of the palmar arch, and I determined to try the effect of pressure. The bandage, which had become hard and dry, was cut away, leaving the compress adherent to the palm. The thumb and fingers were bandaged separately with narrow strips of calico, carried evenly from their extremities upwards toward the hand. These were fixed, with the fingers flexed upon the hand, and firm pressure made by carrying several turns of a calico roller over the compress and round the hand. Compresses of lint, about four inches in length, were laid along the line of the radial and ulnar arteries, and secured by a roller bound firmly round the wrist and forearm, as far as the bend of the elbow. The hand was placed across the chest, and the limb confined in a sling, the forearm being flexed somewhat beyond a right angle. The man was ordered to remain in bed, and directions were given to the nurse that he was not to be raised from the horizontal position, and that the arm was not to be moved, nor the forearm straightened for any purpose.

On the 17th some slight amount of blood escaped from under the dressings, but not enough to make me think it necessary to remove them for the purpose of examining the wound.

The dressings were all removed on the 21st. A compress of lint was again laid on the opening in the palm, and fresh bandages applied to the fingers, hand, and forearm, making firm and uniform pressure as before. These were allowed to remain for about ten days. The discharge became purulent, and was for some time mixed with clots of putrid blood. The bandages were all removed, and a piece of linen rag with simple cerate was left on the wound. The pressure was discontinued, and the man was allowed to move about the ward with his arm in a sling. By degrees the suppuration ceased, and the man left the Infirmary on October 28, with the wound nearly healed.

On July 20, 1872, he came to the Infirmary, and I saw him. A very small scar, not so large as a split pea, can be seen in the palm of the hand. The skin moves easily over the palmar fascia, and the tendons play freely. The power of flexion and extension is perfect. The man says the arm is stronger than the other. Both arteries can be felt at the wrist, but the radial is fuller than the ulnar.

Case 2.—A shoemaker, fifty years of age, was admitted into the Radcliffe Infirmary under my care on February 27, 1872, having lost a large quantity of blood from a deep wound recently inflicted in the palm of his left hand. I was in the ward at the time, and saw the man immediately on admission.

The wound was in the middle of the palm, about half an inch in length, in the line of the metacarpal bones, passing obliquely through the skin and palmar fascia. It was caused by his accidentally sticking his knife into it when seated at his work. A profuse loss of blood followed immediately—to the amount, he said, of two quarts. A fellow-workman tied some handkerchiefs round the hand, and the man came to the Infirmary, a distance of about two miles.

Having laid the man down in the horizontal position, the cloths, which were saturated with blood, were removed, so that I could examine the wound. I had no doubt that the injury was a puncture or division of the palmar arch, and I determined to make use of pressure, which had been so successful in the former case. A compress of lint was placed on the wound in the palm; narrow bandages were wound round the thumb and fingers separately, and also round the hand. Compresses were laid along the line of the radial and ulnar arteries, and a bandage carried round the wrist and forearm up to the bend of the elbow; firm and uniform pressure being made over the fingers, hand, and forearm. The forearm was flexed upon the arm to rather more than a right angle, and confined in a sling across the chest. The patient was placed in bed, with directions that he should not be raised nor the arm moved from the position in which it was placed.

On March 4, the bandages having become slack were removed, and the compress taken from the wound without any loss of blood. A fresh compress of lint was placed upon the wound in the palm, and others along the radial and ulnar arteries, and the bandages reapplied, in the same manner as before, over the fingers, hand, and forearm. The forearm, flexed to a right angle, was replaced in a sling, and the same directions continued for keeping the arm at rest. The wound healed without suppuration. The man left the Infirmary on March 13, and soon afterwards returned to his regular work as a shoemaker.

In June, 1874, Dr. Spencer, the medical officer of the sick club of which the patient is a member, saw him. He tells me that both arteries can be felt at the wrist; the ulnar, he thinks, beats more forcibly than the radial. The man has continued at his work with the free use of his hand.

Remarks.—In the first of these cases, in the absence of accurate knowledge of the exact nature of the aneurismal swelling and its anatomical relations, an attempt to reach the source of hemorrhage by operation in the palm was not one likely to be attended with success. In the other case, where the patient came under notice at an earlier period after the injury, a less unfavourable case presented itself for an attempt to tie the wounded vessel at the seat of injury.

It cannot be said that wounds of the palmar arch form an exception to the known rule that in a case of hemorrhage from an artery of sufficient size to require a ligature, both ends of the divided vessel should, in all cases where possible, be tied at the seat of injury. But it is an almost insuperable objection to an operation for such a purpose, even in a healthy condition of the palm, that it involves a tedious and difficult dissection among parts which cannot be divided or separated without risk of permanent injury.

The cases which have been reported show that stopping the current of blood by ligature of the trunks supplying the palmar arches—whether the radial and ulnar at the wrist, or the brachial at a greater distance—has not secured the patient from a return of hemorrhage.

These two cases are offered to the readers as instances of the success of pressure carefully and efficiently applied. The object of the pressure is to check the force of the whole circulation in the limb; not only the current through the larger arterial trunks—the radial, ulnar, and interosseous, in the forearm and at the wrist—but also through the smaller vessels and capillaries in the hand and fingers, until the injury is repaired. This is not done effectually unless the pressure is made equally on the distal side of the palmar arches, beyond the aneurism or other seat of injury.—*Med. Times and Gazette, Aug.* 29, 1874, *p.* 281.

55.—THE TREATMENT OF PALMAR ANEURISM.

By William Mac Cormac, Esq., M.A., Assistant Surgeon to St. Thomas's Hospital.

[This paper was elicited by one on the same subject by Mr. Cripps, who related a case of traumatic palmar aneurism, which illustrates the serious nature of the disease when treated on the established principle of laying open the sac in order to secure the wounded points.]

Five cases are mentioned by Mr. Cripps as having been treated in this way; three died of secondary hemorrhage, and two were cured, one of these being Mr. Cripps's own case, in which, after several recurrences of bleeding, the ulnar radial arteries were first tied, but without avail, then the brachial with success. Nine cases were cured by pressure, two others were treated by ligature, and one by injection. I can add another case to the list cured by pressure, which will, perhaps, be of interest in connection with the preceding one. On May 1st, a healthy-looking man, aged 30, was admitted to St. Thomas's Hospital under my care. He had cut the palm of his hand a month previously with a saddler's knife, near the ulnar border. The wound, which was strapped up by a doctor, soon healed, and for three weeks he experienced no trouble. Then the hand began to swell, and he experienced much pain. On admission, a week after, the tumour was of the size of a walnut, occupying the ulnar border of the palm, close below the wrist. The skin over the most prominent part was thin and red in colour; the pulsation was very strong, and the tumour very tense. Compression of the arteries at the wrist stopped the pulsation, and the sac could be partially emptied. Subcutaneous injections of ergotin, with instrumental pressure on both radial and ulnar arteries near the wrist, were tried until the following day. No good effect followed; the tumour was larger, more tense, and the skin seemed likely to give way. The forearm was now carefully bandaged with flannel, placed upon a posterior splint, and well elevated upon pillows; the tumour itself was left uncovered, and an ice-bag laid upon it. Digital pressure was now applied to the brachial artery, the directions given being, that no drop of blood should be allowed to pass. After an interval of forty hours, the aneurism was found to have become harder, and without a trace of pulsation. The following day, it was imagined that slight pulsation could be detected; this became next morning somewhat more distinct, and was perceptible during the next eleven days; but it was always very faint, and the tumour, nevertheless, continued during the whole time to diminish steadily in size. By way of precaution, digital pressure was applied afresh for twenty-four hours without altering the condition of matters, and the arm was constantly kept upon the splint. On the 16th, a fortnight after the pressure was commenced, it was observed that, during three or four hours at a time, the pulsation wholly disappeared; would then return for a few hours, and again disappear. During this interval until the final disappearance on the evening of the 16th, it was clear that the cause of the pulsation was a supply of blood from the radial artery; pressure on that artery stopped the pulsation; pressure on the ulnar artery produced no effect whatever.

To-day, May 26th, I may pronounce the patient cured. There has been no pulsation in the aneurism during the last ten days. The tumour is being gradually absorbed, and is now about one-third its original bulk. I conclude that the return of pulsation was due to the contraction of the soft clot formed in the sac, allowing a certain quantity of blood to enter from the distal or radial side. So far as it goes, this case encourages me to further employ pressure in these cases, and I feel convinced that it is better, and more likely to prove successful if we at once apply the pressure to the main trunk, rather than to the radial and ulnar arteries. The long and superficial course of the artery renders it very easy to compress without inconvenience or suffering to the patient. Where the alternative lies between tying the brachial artery, the radial, and the ulnar, I am inclined to think the former the preferable course, as affording greater security against recurrent hemorrhage.—*British Medical Journal*, *May* 30, 1874, *p.* 707.

56.—CASES ILLUSTRATING THE USE OF THE ELASTIC LIGATURE.

Under the care of Lawson Tait, Esq., at the Birmingham Hospital for Women.

The value of the elastic ligature is well illustrated in the subjoined cases. In the first case it was specially suitable. It is, indeed, in the instances of vascular growths so situated that cutting operations are inadmissible, that the gradual strangulation chiefly triumphs. The *modus operandi* tends materially to diminish the risk of hemorrhage, while in operations of no great magnitude the danger of the supervention of phlebitis is but small, at least not greater than after the use of the knife, the cautery, injections, or the ordinary ligatures.

M. B., aged twenty-five, admitted Dec. 25th, with a large varicocele of left labium, which gave rise to much discomfort from the excoriations and discharge. Its removal had been attempted in another institution, but the hemorrhage had been so alarming that it was not persisted in. According to her own account, the patient had to be watched night and day by dressers.

Feb. 2nd. Mr. Tait passed a double elastic ligature through the base of the tumour by means of a trocar, and tied it in opposite directions, so that each half of the ligature embraced half of the base of the tumour. A quarter of a grain of morphia was at the same time injected under the skin of the arm.

4th. The tumour quite black, and nearly separated.

7th. The separation is complete, and a healthy granulating surface about three inches in diameter is left, to which red lotion was applied as a dressing.

Very little pain was complained of after the first twenty-four hours, and there was never the least hemorrhage. On the 23rd of the month the wound was almost healed.

H. S., aged thirty-three, admitted Jan. 5th with a deep and very sinuous fistula leading from about two inches to the left of the anus through the ischiorectal fossa to an aperture in the rectum about three inches up. An elastic ligature was passed and tied on the 26th, and it came out on the 30th. Considerable pain was felt for a few hours after its insertion. The track healed perfectly, and the patient was discharged cured. In this case the advantage of the ligature over the knife was that it saved all loss of blood, and, as the patient was very anæmic, that was a point of importance.

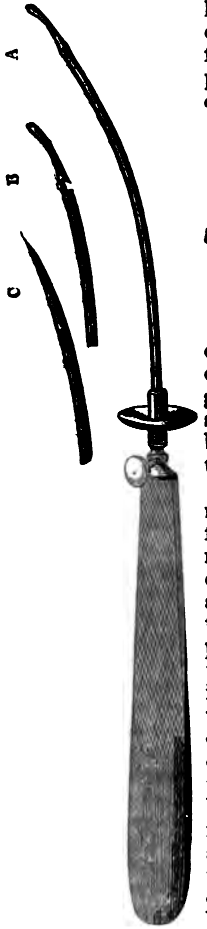
M. P., admitted April 27th, suffering from three perineal fistulæ, one opening to the right of the right labium, and the others about an inch and two inches respectively to the right of the anus. The uterus was quite fixed, and the history given indicated the occurrence of a pelvic hæmatocele some months previously, and its subsequent suppuration. These fistulous tracks led up into a cavity behind the uterus, from which a very abundant discharge flowed after its exploration.

May 1st. Two elastic ligatures were passed, one through the track opening in the labium, and the other through the principal track to the right of the anus into the suppurating cavity, and thence through an opening made into the rectum, and then they were tied through the rectum. They made their way out on May 4th and 5th. A few days later the discharge was coming entirely through the rectum.

19th. The discharge has very much diminished in quantity, and the patient is now able to sit comfortably, as she has not done for many months.—*Lancet, June* 27, 1874, *p.* 905.

57.—A SUBSTITUTE FOR THE ELASTIC LIGATURE.

At a late meeting of the Clinical Society, Mr. Callender exhibited for Dr. Hollis "A Sarcotome." This instrument consists essentially in substituting, as a cutting apparatus, a spiral steel spring and a waxed thread for the ordinary caoutchouc tubing, which has hitherto acted as an elastic ligature. The spring is confined in a small metal tube, A, closed at one end and wormed externally as a screw for about an inch at the other, in order to receive a ring of metal called the "screw-ring." A short cylinder, B, slides readily over A, and is fixed to one extremity of the spring by means of a screw which passes through two longitudinal slits in the sides of A. A metal cap having a small ring at its free end fits on the closed end of A. When arranged for use, the free end of the spring is forced against the closed end of A by the "screw ring" and sliding tube, B. A waxed thread or other ligature is placed around the parts to be screwed; the surgeon passes its end through the ring in the cap, and then fastens them by means of a screw nut fixed to B. The string is released by removing the screw ring, and its whole pressure is directly exerted upon the ligature. Dr. Hollis claims for this invention many advantages over the elastic ligature. It can be used with any form of thread or wire ligature, thus diminishing the risk of breakage; it is easily adjusted to a constant known pressure; and, in as far as it has already been applied by Mr. Callender, it appears absolutely painless in its operation.—*Medical Times and Gazette, May* 23, 1874, *p.* 568.



58.—MR. ALLINGHAM'S INSTRUMENT FOR FACILITATING THE INTRODUCTION OF THE ELASTIC LIGATURE.

There can be little doubt that many simple surgical operations may be advantageously performed by means of the elastic ligature; but the difficulty experienced in getting the india-rubber cord through a fistula in ano, or several times under the base of a tumour, so that it may be cut through in segments, has materially detracted from the general usefulness of Professor Dittel's method.

Mr. Allingham has devised, and Messrs. Krohne & Sesemann have perfected for him, a very simple instrument for drawing the rubber through a fistulous passage or beneath a tumour. It consists in the combination of a concealed hook or notch with a blunt or sharp pointed probe, as the case may require. A shows the curved probe with the hook concealed by the sliding canula, ready to be passed through a fistula, or, if a sharp point be substituted for a blunt point, under a tumour. B exhibits the instrument with the canula drawn back and the previously concealed notch exposed, ready to receive the loop of india-rubber; when this is placed in the notch the canula is pushed home and the ligature is held so firmly that it cannot escape. Thus a double ligature can readily be drawn through a fistula or under a tumour. It is not necessary, in fistula, to see the hook, for if the finger with a loop of india-rubber around it be passed up the rectum, the loop can with great facility be directed over the end of the probe and caught in the notch quite unassisted by vision. C shows the sharp-pointed instrument adapted to the same canula, so that only one handle and one canula are required to complete the double instrument.—*Lancet, Aug.* 1, *p.* 162.

59.—MINOR SURGERY CLAMP.

Mr. Richard Davy, surgeon to the Westminster Hospital, has invented a very handy clamp for the elastic ligature (made by Blaise and Co., 69, St. James's-street, S. W.); and it has been used successfully for operations on the phalanges, circumcision, removal of warts from penis, &c. The same mechanism may be readily adapted for major operations. The ends of an elastic band are placed at one aperture of a tunnelled handle; the loop occupying the other. The surgeon, having made sufficient traction on the elastic loop around the phalanx or penis, turns the screw on, and fixes the bands. The assistant's hold on the handle is very conveniently out of the way of the operator.—*Lancet*, *August* 1, 1874, *p.* 162.

60.—THE ELASTIC LIGATURE AND THE ELASTIC BANDAGE.

By S. Messenger Bradley, Esq., Manchester.

I lately had a case which illustrated very well the advantages derivable from the elastic ligature. A patient suffering from fistula *in ano*, complicated with stricture of the rectum about four inches from the anus, had the fistula divided in the usual way with the knife, when it was discovered that on one side the large abscess which had formed outside the bowel communicated by a long and sinuous track, with the bowel above the stricture. It would have been hazardous to lay open this track with the knife, as it entered the rectum at the point where the right fork of the superior hemorrhoidal artery divaricates from the left. A ligature was, therefore, passed from the ischial opening of the abscess along the fistula, and brought out through the anus. In two days, this ligature had cut its way sufficiently to allow the wire ecraseur to be applied, with which the operation was completed speedily and bloodlessly. While this case is a good example of the advantages, another which was under my care about the same time illustrates the disadvantages of this mode of treatment. A healthy boy of 14 presented himself among the out-patients of the Manchester Royal Infirmary, with a sessile fibrous tumour of the size of a large walnut, situated on the back of the metacarpal bone of the thumb. An elastic ligature was applied around the base, a small sulcus being first made with the knife, in which it was looped. Great pain was experienced for the first five or six hours, which, however, gradually subsided, and in seven days the ligature, tightened from time to time, had completed its work, and cut through the base of the tumour. Instead, however, of the advancing granulations, so pleasantly described by Professor Dittel as following the contracting ligature, an angry edge of acutely sensitive and inflamed tissue was left, whence erysipelas spread up the arm, and for a few days the boy was in decided peril. Two months passed before the cicatrix was complete. It seems probable, that the same modified praise is to be given to Esmarch's elastic bandage; for, while nothing but good is likely to ensue from its application in such cases as the one which Esmarch so graphically described, viz., the removal of carious bone in an anæmic patient, it cannot but fall into desuetude if it be indiscriminately employed in all cases, particularly in those where some septic condition is present, or when amputation is practised on account of the presence of some diseased growth. In such cases, not only is it undesirable to squeeze back the germ-laden blood into the general circulation, but, the blood in the limb being already lost to the heart, it is unwise to burden a perhaps already weakened organ with propelling more blood than the system requires. The tourniquet saves to the system all that the system can benefit by, and to return more than this, except in rare cases where we contemplate transfusion, is unnecessary, if not actually harmful. Even at the hip, the abdominal tourniquet is sufficient to restrain undesirable hemorrhage, and in fat subjects, when it cannot be easily applied, it is probable that a plan suggested to me by Mr. J. Beswick Perrin, of transfixing the limb just below Poupart's ligament with a long pin from fourteen to eighteen inches in length, and then compressing the femoral artery by means of a twisted cord between this pin and the integument, would answer the purpose better than the elastic ligature. It is certain that it is easy, in the dead subject, by this means to perfectly compress the vessel and yet leave room for the passage of the knife.—*British Medical Journal, May* 2, 1874, *p.* 577.

61.—HYPODERMIC INJECTION OF ERGOTIN IN PURPURA HEMORRHAGICA.

By Dr. Wm. L. Lane, Dunfermline.

The following are the brief notes of a new and successful method of treating purpura hemorrhagica. This case was, however, a complication of typhoid fever, consequently a case of even graver prognosis than an uncomplicated one of purpura hemorrhagica. Miss M., aged 16, was attacked with typhoid fever, under which she was progressing favourably, when, on February 16th, three weeks from the commencement of the fever, the patient had a severe attack of epistaxis, which recurred each successive time with greater severity. Forty-eight hours from the first attack of bleeding from the nose, several purpuric spots appeared all over the body simultaneously, and hæmoptysis, hæmatemesis, and hæmaturia set in. The patient took every kind of styptic, notwithstanding which the hemorrhages increased most alarmingly, so much so that she had several attacks of syncope. Seeing her case now quite hopeless, and finding that I had ineffectually used every kind of astringent recommended by various authorities for purpura hemorrhagica, such as turpentine, gallic acid, aromatic sulphuric acid, &c., I resolved, as a last resource, to give hypodermic injection of ergotin a trial. I had previously found it very useful in hæmoptysis and hæmatemesis. Having also considered purpura hemorrhagica a disease of the capillaries, and not a malady the result of a deficient amount of fibrine in the blood, for the blood of purpuric patients coagulates as firmly as that of healthy individuals, and knowing that ergot always causes contraction of involuntary muscular fibres, I hoped that in this case, by its contracting the involuntary muscular fibres of the minute arteries, I should prevent any more hemorrhage by lessening the flow of blood to the capillaries. I injected hypodermically one grain of the liquid extract of ergot at a time. After the first injection, the hemorrhage from the nose, the stomach, the bowels, and the bladder diminished greatly, while fewer new purpuric spots appeared on the body. The second injection completely arrested the hemorrhage. The patient being nourished and stimulated freely her strength rallied, the fever came to a crisis a few days afterwards, and she made a perfect recovery.

This case is of interest in this respect, that it is the first time, as far as I am aware, that ergot has been used hypodermically for purpura hemorrhagica, and its employment has been followed by success.—*British Medical Journal, Sept.* 5, 1874, *p.* 304.

ORGANS OF RESPIRATION.

62.—ON LARYNGOSCOPY.

By Dr. George Johnson, F.R.S., Professor of Medicine in King's College; Physician to King's College Hospital.

One of the most useful means of acquiring skill and confidence in the examination of the larynx, is the practice of auto-laryngoscopy, that is, the examination of one's own larynx. The simplest and, on the whole, the most satisfactory method of auto-laryngoscopy was devised by myself eleven years ago. (See Medical Times and Gazette, Feb. 14, 1863, p. 157.) This method of auto-laryngoscopy requires no special apparatus. Sitting at a table of convenient height, I place a common looking-glass in front of me, and a moderator or gas lamp on one side of the glass, but two or three inches further back, so that the light may not pass directly from the lamp on to the face of the glass. Now, with the reflector on my forehead, I direct the light from the lamp, as it were, into the open mouth of my own image in the looking-glass; then introducing the laryngeal mirror into my mouth, I see the reflection of my larynx in the glass before me, and any one looking over my shoulder can also see the reflected image. If I wish to demonstrate my larynx to several persons at once, I do this by having the mirror in front of me of small size—about three inches by two inches (Fig. 1). Thus, while three or four persons standing behind me can see the reflection of my larynx in the mirror in front, three or four others, standing before me and looking over or under or by the sides of the demonstrating-glass, can see the reflection of my larynx from the laryngeal mirror which I hold in my mouth. Those who stand in front of me have a somewhat better view than those who look over my shoulder from behind, for the obvious reason that some loss of light attends the second reflection from the demonstrating-mirror before the image reaches the eye.

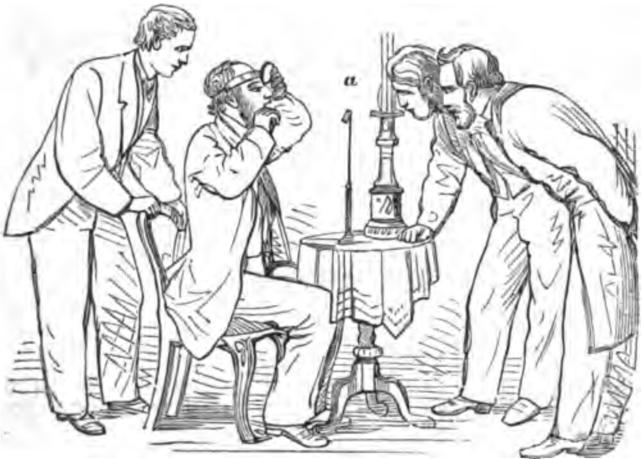


Fig. 1.—Auto-laryngoscopy and Demonstration. *a.* The small mirror on a brass stem.

For beginners in the art of laryngoscopy, this method affords a very useful means of training and practice. One of the chief difficulties at first is to keep a steady light in the patient's mouth while the laryngeal mirror is being introduced. Now the student, after arranging his looking-glass and his lamp, may direct the light into his own open mouth in the looking-glass. This process differs scarcely at all from that which he will have to practise on his patients. Then having learned to keep the light steadily and automatically directed into the mouth, he may warm and introduce the laryngeal mirror, and he will soon see his own larynx. The frontal reflector is a very useful means of lighting the throat for the purpose of examining the tonsils, palate and pharynx. Placing a lamp or candle by the side of the patient, the operator, with the reflector on his forehead, throws the light into the throat, and has both his hands free to depress the tongue and to apply caustic or other local remedies. In cases of diphtheria and scarlet fever, by this method of illumination a thorough examination of the throat can be made in a much shorter time than by the ordinary method, and without raising the patient's head from the pillow. The operator, too, in this way, runs less risk of infection from inhaling the patient's breath, or from the morbid secretions being coughed into his face.

I had practised laryngoscopy for some years before I discovered that the slight nervousness experienced by most patients on having their throats inspected for the first time causes them to hold their breath; and this suspension of breathing soon distresses the patient and embarrasses the operator. The direction which I now give to my patients is in substance this: "While I introduce the mirror and look at your throat, do not hold your breath, but continue to breathe in and out freely;" and I do not attempt to introduce the mirror until I see that the patient understands and obeys my direction. An analogous instance of nervous apnœa sometimes occurs when a timid patient is about to inhale chloroform. Emotional excitement may so completely suspend the respiratory movements, that the patient has to be encouraged and instructed to continue his breathing before the inhalation can proceed. I was told lately by a photographer, that a nervous subject, when told to remain still, will sometimes, as it were, forget to breathe. The result is, that the sitter soon feels distressed, and has a pained expression of countenance. A medical friend once, when examining with me the photograph of a distinguished surgeon, said, "He looks as if he were passing a renal calculus." He had probably held his breath while sitting for his photograph.—*British Medical Journal, May* 23, 1874, *p.* 677.

ALIMENTARY CANAL.

63.—DESCRIPTION OF A NEEDLE GUARD, FOR USE IN OPERATIONS FOR HARE-LIP AND OTHER PLASTIC OPERATIONS ON THE LIPS AND FACE.

By Henry J. Tyrrell, Esq., Surgeon to the Mater Misericordiæ Hospital, Dublin.

In operations for hare-lip and in other plastic operations on the lips and cheeks, how to deal with needle points has been to me for a long time a source of difficulty.

Formerly I was in the habit of breaking them off, but I was not pleased with this mode of procedure, for the following reasons:—1. If the needles are tolerably strong (which they should be) the force necessary to break them causes a shock quite sufficient to disarrange the neatly and accurately adjusted edges of the wound. 2. At the place where the needles are broken, or cut, a rough edge is left, which renders their withdrawal more difficult and painful than if they had not been broken or cut. 3. When withdrawing a needle, it is much more easy to do so (and consequently, the edges of the wound are less likely to be torn asunder) if it is sufficiently long to be grasped, and rotated between the finger and thumb before traction is used.

For these reasons for some years I have been content to stick pieces of cork on the needle points, and although it looks a clumsy proceeding, I much preferred it to the more usual practice.

I have lately devised a simple contrivance, which I think of service in such cases. I call it a needle guard. It consists of two little plated tubes, each three-quarters of an inch long, and open at one end. The tubes are tied together with a piece of string elastic, or better still, with a vulcanised india-rubber ring, sufficiently extensible to allow the guard to be easily slipped over the two ends of the needle.

The guard does not interfere with the twisted suture or skin and can be at once removed, without the slightest difficulty or dragging, when the needle is about being withdrawn.

If the surgeon is "of a frugal mind," and wishes to use the same needles again and again, he can do so by simply running them, after use, to and fro for a moment through an emery bag. The friction restores their polish and sharpness.

The guard was made for me by Messrs. Read, Parliament Street.—*Dublin Journal of Medical Science, Sept.* 1874, *p.* 223.

64.—ON THE REMOVAL OF HEMORRHOIDAL AND OTHER TUMOURS.

By Henry Lee, Esq., Surgeon to St. George's Hospital.

Dupuytren and Cline were in the habit of removing internal piles by cutting them off with a pair of scissors. Sir B. Brodie at one time adopted this practice. In about two-fifths of Dupuytren's cases subsequent hemorrhage occurred, and sometimes to a very considerable extent. Sir B. Brodie, during the short time he tried the practice, states that, in the first one or two cases, he found no inconvenience to arise from his altered practice; but then a case occurred in which the patient lost a great deal of blood; in another case the hemorrhage was so great that the patient nearly died; and then a third case occurred in which also the patient lost an enormous quantity of blood. After that time Sir B. Brodie always removed large internal piles by ligature. The following is the plan he recommended:—If the piles be of large size a large curved needle is passed through the base of each, armed with a strong double ligature. The double ligature is divided into two single ligatures, "which are tied round the base of the pile, one on one side and the other on the other side, with a single knot. . . You then proceed to another step of the operation: cut off the convex portion of each pile, so as to make an opening into the cavity of the convoluted vein which forms it. Thus you take off the tension produced in the pile by the blood which it contains, and are enabled to draw the ligature tighter than before. . . You have now only to complete the double knot upon each of the ligatures, and cut off the threads close to the knots, returning the piles, ligature, and all into the rectum."

Now in this mode of performing the operation there is one source of danger which has been overlooked. It may so happen that a large vein is transfixed by the needle, and its two sides held separate. Its open mouth would then be bathed in the puriform secretions of the parts, and the conditions would be those most favourable for the absorption of those secretions. I have examined the body in more than one case where death might have been attributed to this cause. In one instance in particular, where the operation was performed by a most experienced surgeon, secondary deposits were found in the liver and in no other part—showing that the absorption must have taken place through the superior hemorrhoidal veins. This particular cause of danger may be avoided by carrying the ligature from one side, after the double knot is tied, round the whole tumour, as has often been done, and tying it on the opposite side.

Another objection to this mode of operating is the pain. In order to draw the ligatures very tight, the parts must be pulled down to a level with the hands. This causes very considerable suffering; and although, for the moment, or under the influence of chloroform, this may be of no great consequence, yet there can be no doubt that the less the parts are disturbed the less risk there will be of subsequent inflammation. I have known a number of patients who have complained most bitterly of the pain that has been caused by the operation of tying their piles, and this not only at the time or immediately after the operation, but sometimes for several days. This pain I have attributed in great measure to the forcible dragging down of the parts below the level to which they would naturally be protruded.

A third objection to the operation by ligature is the comparative length of time that the patient is kept in bed. The ligature has to eat its way through, and some portion of the pile necessarily sloughs off before the process of repair can commence; a week may thus be lost, during which time generally there is more or less constitutional disturbance.

The old operation which I have now described was, on the whole, a good one and generally successful, but patients who have undergone it have often warned others against undergoing the same. Some patients have an instinctive dread of having any cutting or of having needles used. The operation may then be performed with safety and without dragging upon the parts by the elastic ligature. I have performed several operations in this way. The pile is seized with a pair of forceps which closes with a spring or screw and terminates in a ring. The elastic ligature is carried with the point of the finger several times round the end of the forceps and tied. The protruding pile or piles are then returned into the rectum. They slough off in the same manner as if tied with a silk ligature, but there is this additional security—namely, that the ligature always remains tight. If the pile be large, and a ligature is applied, after it has eaten its way partly through it becomes loose, and should the pile not be completely dead the circulation in it may be in part restored, and there is some danger of the products of the decomposing mass becoming absorbed.

It is astonishing with what rapidity the elastic ligature will cut its way through. Not long ago a case of fistula in ano was under my care in St. George's Hospital. Not wishing, for some cause or other, to perform the usual operation, I passed several threads of elastic ligature through the fistula, and brought them out of the rectum. They were then tied moderately tight. At the expiration of forty-eight hours I was going to farther tighten the ligatures should it be found necessary, when, to my surprise, they came away in my hand, having completely divided all the structures between the fistula and the bowel. The elastic ligature, if used for this or for other purposes, should be solid. If tubular, when stretched it flattens against the parts, and, consequently, does not cut through them so easily.

The objections mentioned with regard to Dupuytren's and Brodie's modes of removing piles apply in some degree to a modified operation which has been extensively practised of late years. It consists in a combination of cutting and tying. The tumour to be removed is drawn down by a hook armed with several sharp teeth. The mucous membrane is cut through at its sides and lower parts with a pair of scissors. The remainder of the pile, which generally contains its arterial supply, is then tied. The portion of the tumour which projects beyond the ligature is cut off, and the remainder is returned into the rectum.

By far the best and safest way, according to my experience, of removing a pile, is to grasp it at its base with a clamp made in the shape of a pair of scissors, curved on the flat, and with the points turned inward; then to cut the pile off with a pair of scissors of the same shape, and to sear the cut surface with an iron after it has passed from a dull-red to a black heat.

The advantages of the clamp are: 1. That, being curved horizontally, it can be inserted between the nates, so as to grasp the base of the pile, without the latter being forcidly dragged down. 2. From the limbs of the instrument being curved inward, every portion of the pile is equally compressed, and no part can possibly slip. 3. One blade is made to play within the other, so that they cannot be displaced by any horizontal pressure. 4. The blades are sufficiently thin to allow nearly the whole even of a small tumour to project, and consequently to be removed, on the concave surface of the clamp.

Operating with this instrument, I have hitherto had no case in which there was any hemorrhage to signify. About a year ago I removed a large portion of the tongue with a similar instrument; and about a month from the time I am writing I removed a testicle affected with soft cancer, which weighed something less than a pound. The cord was seized with the clamp and cut with a pair of curved scissors. The cut surface was then seared in the way described. No ligatures were required. The wound was closed with carbolised sutures. and healed very satisfactorily, although the patient had an attack of erysipelas of the skin covering some enlarged glands in the opposite groin.

The first curved screw clamp which I had made was in 1839. It consisted of two parallel metal plates curved on the flat, with a screw at each end. This instrument I have still in my possession, and have lately used it in removing a very large mass of epithelial cancer from the scrotum. Various modifications of this instrument, and the modes of using it, have at different times been adopted. Mr. Matthews, of Portugal Street, many years ago made for me a clamp in the shape a pair of scissors, with the blades curved in both directions, as above described. Mr. H. Smith adapted a screw to the handles of a similar-shaped instrument, and this was a great improvement; but the instrument which at present passes under Mr. Smith's name has straight, thick, parallel blades, which render it difficult to be used when it has to be introduced between projecting parts. When the tumours are small, they are often compressed between the blades, instead of being protruded beyond them. If the blades of an instrument are parallel, the pressure which it exerts must be chiefly on the centre or thickest part of the tumour. The parts of the tumour near the point and the handle of the instrument, unless very great force is used, have comparatively little pressure exercised upon them; and these parts, as is found in practice, are very liable to slip away from the instrument during the operation. If this happens after a pile has been excised, very inconvenient hemorrhage may take place. If, on the other hand, very great pressure is used, the parts are left bruised, and in a condition not adapted for rapid recovery.

It might be supposed that a thick blade would more effectually protect the subjacent parts in cases where the actual cautery is used; but experience proves that this is quite unnecessary. It seldom happens that after an operation of this kind the clamp is even warm to the touch. The thicker the blades under similar circumstances, the less of the tumour can project beyond them, and the less, therefore, can be removed. In operating upon hemorrhoidal or other tumours, it is of considerable importance, as regards the subsequent pain and the rapidity of recovery, that the parts should not be bruised, and should not be dragged more than necessary out of their natural position. At different times I have tried a variety of instruments, and there is none, I believe, which will enable the surgeon to remove tumours in the way mentioned so safely and with so little disturbance to surrounding parts as that now described, made for me by Mr. Blaise, of St. James's Street. The rapidity with which patients recover, as compared with the operation by ligature, is a point of no little importance.

A general in the army, upwards of seventy years of age, had piles with protrusion of the mucous membrane, so that he could not walk without great inconvenience. He submitted to the operation without chloroform as I have described it. I saw him once or twice subsequently, but five days after the operation when I called I was told that, feeling well, he had gone to Brighton. This gentleman remains well up to the present time. If care be taken not to stretch or bruise the parts, and no slough be produced by the cautery, cicatrisation commences at once, and is soon completed.

In performing this operation I much prefer the heated iron to the galvanic cautery. When the iron is applied to the part at the heat mentioned, the cut surface will actually adhere to it. This probably depends upon the coagulation of the albumen in the tissues, and the same action that makes the parts adhere in some degree to the iron will make them adhere to one another. The vessels in this way are sealed in a way that they cannot be where a slough is produced. With the galvanic cautery the temperature cannot be regulated, and it is difficult to say beforehand whether the wire will become of a black, red, or white heat. If a slough is produced, as it certainly would be by a red heat, that slough must separate before the process of repair commences. In operating on piles with the clamps formerly in use, I was in the habit of introducing a plug with a large bulb into the rectum, after the operation, in order to prevent any subsequent hemorrhage. This I have now discontinued, as unnecessary.

In advocating, as I do, the operation by clamp and actual cautery for the removal of solid piles or tumours in other parts, I would guard myself against being understood to mean that all piles should be treated in this way. Where the mucous membrane and the parts below are not much thickened, a very great deal may be done by constitutional treatment, ablution with cold water, and especially by the local use of suppositories containing the powder of cubebs. In cases, again, where these fail, the application of the strong nitric acid is an excellent remedy. The mode of applying this, as at first practised.

was objectionable. The parts were made to protrude, and the acid was smeared over them; some of the acid is, under such circumstances, drawn up by capillary attraction between the folds of the bowel, and here it becomes mixed with the secretions of the parts, and, consequently, diluted. The result is, that it irritates but does not kill the mucous membrane with which it comes in contact, and a very considerable amount of inflammation and of suffering may be produced.

The best way of applying the acid, according to my experience, is to introduce a small speculum into the bowel, such as was first described by Sir William Fergusson. It has an opening on its side or near its extremity. It may be moved about until the pile projects into the opening. The pile is now wiped dry, and the acid applied on a glass rod. Several successive applications may be made in this way, but during the process the speculum should be held perfectly still. When the acid has produced the effect desired, some chalk-and-water should be freely used, so as to neutralize any remaining acid, and then the speculum may be removed. Performed in this way the operation is perfectly safe, and, as far as the acid is concerned, painless.

It is well to destroy one pile only at a time, but the operation may be repeated as often as necessary at an interval of three or four days.—*Lancet, April* 18, 1874, *p.* 541.

65.—TREATMENT OF HEMORRHOIDS BY LINEAR CAUTERISATION OF THE ANUS.

By Dr. Woillemier.

After having written an exact history of all the methods of treating hemorrhoids, and after having either tried the greater number of them in private or hospital practice, M. Woillemier (L'Union Médicale) has finally fixed on the following rational procedure, as removing all dread of the operation both in the operator and in the patient.

The patient, whose rectum has been emptied in the morning by means of an injection, ought to be chloroformed; but if he prefer to remain awake, it is of little importance, as the operation only lasts some seconds. He is laid on the edge of a bed, with one leg extended, and the other bent as if he were going to be operated on for fistula. The assistant raises the disengaged buttock, the surgeon paints the anus and the surrounding parts largely with collodion, whilst an assistant, by means of bellows, drives off the fumes of the ether, which are sure to catch fire when a highly heated cauteriser is brought near them. During these preparations, two knife-shaped cauterisers have been placed in a small furnace, full of charcoal or burning wood. The blades of these cauterisers should be two centimètres long and one wide; the tip and edge should be blunt, as in ordinary cauterisers, but the back should be four or five millimètres thick, so as to hold enough heat. The surgeon takes one of these cauterisers when it is white-hot, and introduces it about one centimètre into the anus, bearing with the shoulder of the instrument rather more on the cutaneous than on the mucous orifice, and makes four cauterisation lines, before, behind, on the right and on the left. The operation is terminated when it has lasted five or six seconds. The patient is brought back to consciousness, and simple water-dressings only are applied to the anus. We must premise that, under the influence of the congestion produced by cauterisation, the hemorrhoidal tumour will reappear the first day or so, and sometimes larger than usual, but no notice must be taken of it. We can only relieve the pain of the patient, pain which has no relation to the cauterisation, by coating over the hemorrhoids with a narcotic ointment, and covering them up with a poultice. The tumour soon ceases to be painful, and is at last completely and spontaneously retracted. The time necessary for cure varies only according to the size of the hemorrhoids, the relaxation of the anus, and the age of the patient. It has never exceeded one month, and has sometimes been much less.

In some subjects, even when circumstances have made success doubtful, cure has taken place as in simple cases. The patient ought to be chloroformed, for though the operation is rapid, it is also very painful, particularly in private practice, where the assistance is less efficient than in an hospital. The patient may struggle after one or two applications of the cautery, and even refuse to allow others to be made, so that the operation would remain incomplete. The orifice of the anus and the surrounding parts must be painted with collodion. This is a very important precaution. All surgeons have affirmed the difficulty of preventing the effects of radiating heat. To preserve the parts from these effects, cloths steeped in cold water and thin plates of wood have been used; but not only are these in the operator's way, but they are not, as a rule, efficacious. Collodion, on the contrary, even when applied in a thin layer only, forms an artificial epidermis scarcely permeable to heat and sufficiently protecting the skin.

It is necessary to dissipate the ether-vapour, or it would take fire as soon as the heated cauteriser is brought near the anus. The accident would not be of much importance, for the burning vapour is easily extinguished by blowing it out; but it is better to avoid it altogether. It is easy to understand the importance of the use of collodion in relation to the pain which succeeds the operation. The patient cannot feel pain in the points to which the iron has been applied, for the tissues are dead, but he suffers in the surrounding parts which have been attacked by the radiating heat, and the painful nature of superficial burns is well known. These burns, however, are not very serious, and only last about four days, at the time when the inflammation necessary for the falling off of the sloughs develops itself, or during defecation after the sloughs have fallen off. The cauterisers ought to be knife-shaped, or even with round points. To ensure the rapidity of the operation, they should be heated to white heat. One operation is frequently enough, but more than two are never necessary, how large soever the hemorrhoidal tumour may be, for we do not act directly on the latter, but on the anus.

In some cases, the tumour cannot be reduced before operation, or at least entirely so, when it still escapes outwardly in consequence of the involuntary contractions of the patient. No notice must be taken of this accident. The cauteriser is slipped between the tumour and the walls of the anus, for it is of little consequence if the hemorrhoids should be lightly cauterised by the back of the instrument.

Sometimes the shoulder of the cauteriser implicates the cutaneous circumference of the anus, but that is of no importance; it is even sometimes useful when the anus is considerably relaxed. There is no need to dread hemorrhage, for the cauteriser interferes only with the mucous membrane, the submucous cellular tissue at the entrance of the anus, and the skin at the edge of the orifice. At all these points the vessels are small, and when the hemorrhoidal tumour is touched by the back of the cauteriser, it is in so light a manner that no vessel of any importance can be opened.

If any accident is to be feared, it would be stricture of the rectum; but the four cicatrices which have been formed at the entrance of the anus, although possessed of great retractile power, are made linear in the direction of the intestine. Between them are intervals occupied by highly elastic tissue, which make stricture impossible. It may be objected that, if the anus remain sufficiently dilatable, the patient may have a relapse. This accident is certainly not impossible, but it is the business of the surgeon to estimate the state in which he finds his patient. If he be going to operate upon an old person having a large and old standing tumour, and whose anus has little resilient power, he should lean a little more heavily on the cauteriser, so as to implicate a greater thickness of tissues than in ordinary cases; and by this procedure he will be sure to avoid a relapse.—*Lond. Med. Record, May* 20, 1874, *p.* 303.

66.—ON THE TREATMENT OF HEMORRHOIDS, PROLAPSUS RECTI, AND FISTULA IN ANO WITH THE GALVANIC CAUTERY.

By Thomas Bryant, Esq., Surgeon to Guy's Hospital.

The surgical treatment of these affections of the anus and rectum has been much simplified by the introduction of the galvanic cautery, and cases of hemorrhoids and prolapsus recti, however well they may otherwise be clamped and cauterised, can with it be treated with greater facility, confidence, and success.

Cases of fistula in ano, by means of the same instrument, can likewise be divided in a simple and bloodless way, with less pain at the time than that caused by the knife, and less subsequent disturbance; indeed, I am disposed to think that in the bloodless nature of the operation for fistula in ano the general utility of the instrument is well displayed, although its special value is doubtless better seen in the treatment of the cases I have already brought before your notice.

The operation for the removal of hemorrhoids, or the cure of prolapsus recti, with the galvanic cautery, differs in no respect from that usually performed with the common cautery. The bowel to be treated is brought well down and into view either by means of the patient who is made to strain over a pan of hot water, or by an enema of warm water. The different portions of the bowel to be removed are then seized and clamped in vertical pieces, radiating from the anus, each clamped portion, or rather the upper half of each portion, being then cut off with scissors. The parts are then made ready for the application of the cautery—the porcelain cautery heated to a red heat. This is to be rubbed over the surface of the projecting mass till it is burned down to the level of the clamp and turned into a dry eschar; each piece is to be dealt with in order, and each clamp removed as its segment is cauterised, the whole being carefully returned and pressed into the rectum when the operation has been completed. When the cautery is efficiently applied no bleeding follows this operation, and very little pain. The pain induced after the galvanic cautery is far less than that which follows the actual cautery. During the application of the cautery the soft parts should be well protected by strips of wet lint or ivory spatulas. The following cases will illustrate many of these points.

Case 1.—*Internal Hemorrhoids; Removal by Galvanic Cautery; Recovery.* (Reported by Mr. Hardie.)—Eliza D., aged thirty-six, married, came into Guy's Hospital under Mr. Bryant's care with extensive hemorrhoids, which had been gradually getting worse for three years. She had lost much blood from them, both when at stool and otherwise.

On Jan. 27th, Mr. Bryant applied a clamp to three distinct masses of hemorrhoidal substance, cut off the tops of the projecting masses, and freely burnt down the stumps with the galvanic cautery. He then removed the clamps and returned the projecting bowel; no bleeding following. The patient was under the influence of chloroform. Very little pain followed the operation. On the fourth day the bowels were relieved by an enema, and on the seventeenth she left the hospital quite well.

Case 2.—*Hemorrhoids of Three or Four Years' Standing; Removal by Galvanic Cautery; Cure.*—Wm. T. M., aged fifty-five, came under my care at Guy's Hospital with some large bleeding hemorrhoids of three or four years' standing. Nothing but their removal could be entertained. He had lost a great deal of blood at times.

On July 11th, 1872, the operation was performed, the piles having been previously brought down and secured with clamps. The projecting masses were cut off, and their bases well cauterised with the platinum cautery, dry eschars being formed. No bleeding followed, and but little pain. The man left the hospital, well, in three weeks.

Case 3.—*Hemorrhoids for Thirty Years; Removal by Cautery; Cure.*—Mrs. M., aged sixty-five, of Stratford, consulted me early in 1871 for the bleeding piles, with which she had been troubled for thirty years. For the last ten she had suffered frightfully from them, being hardly able to stand or walk without their descent and loss of blood.

On March 27th, 1871, with the assistance of Dr. Drake, I removed the mass in four sections, each division having been clamped, cut off, and freely cauterised with the galvanic cautery. A steady recovery ensued, and the patient is now quite well.

Case 4.—*Bleeding Hemorrhoids; Removal by Means of Clamp and Galvanic Cautery; Recovery.*—In Feb. 1872, Miss L., a middle-aged lady, consulted me for a troublesome hemorrhoidal tumour, which had been steadily increasing for some years, and had been the cause of her losing much blood. On Feb. 16th, with the assistance of Mr. Jackson, of Highbury, I removed the mass in two parts by means of the clamp and galvanic cautery. The operation was almost bloodless, and was followed by rapid and complete recovery.

Case 5.—*Hemorrhoids for Twelve Years; Removal by Clamp and Galvanic Cautery; Recovery.*—Grace B., aged thirty-seven, came under my care in May 1872, for bleeding piles of twelve years' standing. On June 7th they were removed by means of the clamp and galvanic cautery in three masses. On June 13th the bowels acted painlessly, and by the 20th the parts had healed.

Case 6.—*Hemorrhoids; Clamp and Cautery; Recovery.* (Reported by Mr. W. Brown.)—Henry E. O., a shoemaker, aged fifty-four, was admitted into Job Ward on March 18th, 1873, with an oval-shaped tumour situated at the orifice of the anus, about two and a half inches in length. It is divided into two parts: an outer, where the mucous membrane covering it is pale in colour and lobulated; and an inner, where the mucous membrane is red, very tender, and bleeds a little.

The patient had a chancre thirty-six years ago, but does not suffer from sore-throat nor from pains in his bones. About twenty-eight years ago, whilst fighting, he received a blow on the back in the right lumbar region, which gradually became painful and then swollen, and he was treated for it in this hospital by Mr. Cock; after this he remained quite well until seven years ago, when he noticed he had a tumour about the anus. He came as an out-patient, and it was tied and cut off. Three years ago he again noticed a tumour about the anus, which came down when he walked about, but he could easily reduce it.

On the 22nd March the patient was put under the influence of chloroform, and the inner tumour was clamped and burnt with the cautery. The folds of the skin about the anus were subsequently very œdematous and swollen, but by April 7th these symptoms had subsided, and on the 14th he passed a motion without pain or bleeding, and he left the hospital. He returned to show himself a fortnight later, when he was quite well.

Case 7.—*Hemorrhoids; Operation by Galvanic Cautery; Well.* (Reported by Mr. G. W. Butler.)—John C., a photographer, aged twenty-nine, was admitted into Job Ward on the 10th of November, 1873, with hard and enlarged glands in the neck, and piles, which bled when he passed a motion. His bowel also came down when he was relaxed. It appeared that he had suffered from bleeding piles for four years, and had been under treatment, but was advised to undergo an operation. A year previous to admission he contracted syphilis. A bubo came in his right groin, which was opened; and he had suffered subsequently from sore-throat and pains in his bones. He had been accustomed to drink hard.

Dec. 12. The hemorrhoids were brought down by placing the man over hot water. They came down in three masses, each of which was caught up by the clamp, cut off by a pair of scissors, and the galvanic cautery applied to the stumps. He complained for some days of pain after passing a motion, but there was no bleeding, and the external parts were quite normal. He was discharged from the hospital on the 22nd of December, cured.

Case 8.—*Prolapsus Recti; Removal of Parts by Cautery; Cure.*—In January, 1870, on the advice of Dr. H. Oldham, I was consulted by Miss L., aged fifty-seven, for a severe prolapse of the rectum, with daily bleeding from the part. It had existed for sixteen years, and been steadily getting worse. The bowel came down on the patient standing.

On Jan. 27, I removed four vertical portions of the mucous membrane of the bowel, having previously clamped them and cut off the projecting folds. No blood was lost at the operation, and a rapid cure ensued. The lady was up and about well in three weeks.

Remarks.—The cases just quoted are ample to illustrate the treatment of the more ordinary forms of hemorrhoids and prolapsus recti by means of the galvanic cautery; but under exceptional circumstances some modifications of this treatment may be called for. Thus, in cases of piles as represented by the growth of small vascular strawberry-looking tumours, I have been content with the direct application of the cautery to the growth, having exposed it well by means of a speculum; and I have found this practice a good one. In other cases, again, of prolapsus recti, I have simply scored obliquely in lines the surface of the mucous membrane of the prolapsed bowel, and returned it; and this treatment has been followed by good success, more particularly when employed in the milder forms of the affection. In cases of long standing such treatment is inapplicable. Nothing but the removal of portions of the prolapsed mucous membrane will effect a cure.

With these remarks upon cases of hemorrhoids, I will pass on to consider the treatment of fistula in ano by the galvanic cautery; and I am pleased to say it is as simple as it is satisfactory. It is performed as follows. The platinum wire, or twist of platinum wire, is first introduced through the fistula. and I generally do this through the groove of the probed director when it has been made to pass through the fistula into the bowel. I then hook, with the finger that is in the rectum, the end of the wire downwards through the anus, and remove the grooved probe, in this way one end of the wire being made to protrude through the rectal orifice of the fistula, out at the anus, and the other through the external orifice of the fistula. The two ends of the wire are then connected with the poles of the charged battery, and the wire heated, the division of the fistula being made either by means of the écraseur, or a gentle sawing movement of the wire, or traction upon it. The wound may then be dressed with oiled lint or cotton-wool, and the case treated upon ordinary principles, the wound having simply to heal by granulation. In the following cases the above practice is illustrated.

Case 9.—*Fistula in Ano Treated by Cautery; Cure.*—Jonah C., aged forty-six, a delicate man, was admitted into Guy's Hospital under Mr. Bryant's care in May, 1869, with a fistula in ano. It had followed upon an abscess three months previously. On May 20th Mr. Bryant divided the fistula by means of a platinum wire heated with the galvanic battery. The operation was done with facility, and was quite bloodless; but very little pain followed the operation. The wound healed rapidly, and in less than a month the man left the hospital cured.

Case 10.—*Fistula in Ano; Division by Galvanic Cautery; Recovery.*—Thomas D., aged forty-three, came under Mr. Bryant's care at Guy's Hospital in August, 1872, with a fistula in ano. It had existed for five months. On August 6th Mr. Bryant laid the fistula open into the rectum by means of the galvanic cautery. He passed a probe first through the fistula, and then drew the platinum wire through the sinus, one end of the wire being brought out through the anus and the other through the buttock. The wire was then heated, and by means of a gentle drawing motion the tissues were divided. No bleeding or pain followed the operation. On the fourth day the bowels acted, and in three weeks the parts had completely healed.

Case 11.—*Fistula in Ano; Division of Sphincter with Wire of Galvanic Cautery; Cure.* (Reported by Mr. Parker.)—James S., aged fifty-eight, was admitted into Guy's Hospital on June 1st, 1870, with a fistula in ano of four months' standing. On June 20th Mr. Bryant divided the fistula by means of the wire heated with the galvanic cautery. He first passed a director through the fistula into the bowel, and the wire through the groove of the director, and having in this way threaded the fistula, he simply, by a gentle drawing motion, made the wire burn its way out, having heated it by connecting the two ends of the wire with the battery. An excellent recovery followed. Not a drain of blood was lost during the operation, no dressings were required after it, and a very insignificant amount of pain was experienced.

Mr. Bryant has now treated many fistulæ in this way, and thinks highly of it in patients with the hemorrhagic diathesis, or in others where any loss of blood is to be avoided.

Case 12.—*Fistula in Ano; Division by Galvanic Cautery; Recovery.* (Reported by Mr. Stuart.)—John S., aged forty-four, a cellarman, was admitted into Guy's, under Mr. Bryant's care, on July 8th, 1869, for fistula in ano. It had existed for eighteen months, and had followed an abscess. The external opening was on the right side of the anus, about one inch and a half from the orifice, and the inner opening was about one inch up the bowel.

July 17th. The director having been passed through the fistula into the bowel, and its end made to protrude through the anus, Mr. Bryant passed the platinum wire of the galvanic cautery along the groove, and, having attached its end to the two poles of the battery, by a slight sawing motion made it cut its way out. Little or no pain followed this operation, and on the third day the patient was up and dressed; in two weeks the part had healed.—*Lancet, May* 16, 1874, *p.* 681.

67.—THE TREATMENT OF HEMORRHOIDS BY THE INJECTION OF THE TINCTURE OF PERCHLORIDE OF IRON.

By William Colles, Esq., Surgeon to Steevens' Hospital, Dublin, and Lecturer on Surgery in the Hospital College.

It is remarkable that, in a disease of such constant occurrence as hemorrhoids, surgeons should still differ as to the nature and origin of the tumours—some considering them as dilated veins, and others regarding them as mere growths of a vascular tissue. And this difference of opinion has much influence on the treatment of the disease.

From my observation on examining the part when removed, and also considering the nature of the bleeding, which is generally bright arterial blood, and that at times the orifice of a minute artery can be seen pulsating, I have been led to consider them as a vascular growth resembling nævus in children, or erectile tissue in adults.

For the treatment of this disease the surgeon has many plans of treatment—either by medicines used locally or constitutionally, or by various operations. Still, we observe, the advocates of each plan will tell us that they have met cases which resisted the treatment that others advocate as infallible, and that theirs is the best. I beg to add another proceeding in these cases, not to supersede all others, but still, I think, presenting many advantages, and more likely to be generally successful, and also less liable to dangerous consequences than some others. Some years ago I saw the late Mr. Cusack treat the disease by the introduction into the centre of each tumour of a needle coated with nitrate of silver. I have also often tried this cure; but it causes considerable pain for some days after the operation.

I then thought the same effect would be obtained, with little or no pain, by acting on the internal structure, and treating them, as we do nævus, by the hypodermic injection of some preparation of iron or other ingredient, in order to excite a certain amount of inflammation, and secure the coagulation of the blood in the minute vessels composing the growth, and then subsequent absorption; and such a procedure I adopted in the following case:—

Case.—(Reported by Dr. F. W. Warren, Resident-Surgeon to Dr. Steevens' Hospital.)—Denis R., aged forty-one years, of delicate and anæmic appearance, was admitted to Dr. Steevens' Hospital, March, 1874, suffering from bleeding internal piles.

Previous History.—He stated that for the past twelve years he had suffered from irritation about the anus, with a feeling of heat and fulness in the parts, these symptoms undergoing exacerbations at intervals, when an attack of bleeding would give him temporary relief. This state of things continued until a few months ago, when the attacks became more frequent, the hemorrhoidal tumours protruding during each act of defæcation, accompanied by hemorrhage more or less severe. He also stated that the bowels were habitually constipated, requiring purgative medicine to keep them regular.

Symptoms on Admission.—The patient presented a very blanched and emaciated appearance. He complained of a sensation of itching and smarting about the anus, increased to pain during defæcation with considerable hemorrhage. He stated that he was daily becoming weaker, and presented all the appearance of one suffering from repeated attacks of hemorrage. Appetite very poor. On examination (the patient being desired to force down), three tumours (each being about the size of a walnut) protruded, and became visible outside the anus. These tumours presented the usual smooth red appearance. These projections disappeared spontaneously, or with gentle pressure, after defæcation. Ordered confect. sulphuris, a teaspoonful three or four times daily, so as to combat the habitual constipation, and infusion of rhatany to be applied locally.

March 27th. Feels somewhat better; the irritation in the anal region being diminished. Bowels regular. As the piles still protrude during defæcation and bleed, an enema of warm water was to-day administered, this causing the hemorrhoids to protrude; fuming nitric acid was then freely applied. This procedure caused excruciating pain which continued for two hours.

March 31st. Much in the same condition. States that he does not feel anything better. Had one motion from the bowels since the application of the nitric acid, accompanied by great pain and some hemorrhage. Bowels confined. Ordered haust. oleosus.

April 11th. Has not experienced any relief to his symptoms, the mucous projections still protruding during defæcation, accompanied by hemorrhage and pain. To-day, the piles being forced down, the ordinary tincture of the perchloride of iron was injected, by means of a hypodermic syringe, into each hemorrhoidal tumour (the quantity injected into each being about 20 minims). The patient was then removed to bed. The injection caused much less pain than the nitric acid.

April 18th. Expresses himself much better. Has had no bleeding since, and much less pain during defæcation. Ordered suppositoria acidi tannici—one to be introduced into the rectum each night.

April 28th. Greatly improved. The hemorrhage, pain, and irritation have completely subsided. Presents a much better appearance. Appetite improving daily. Bowels regular.

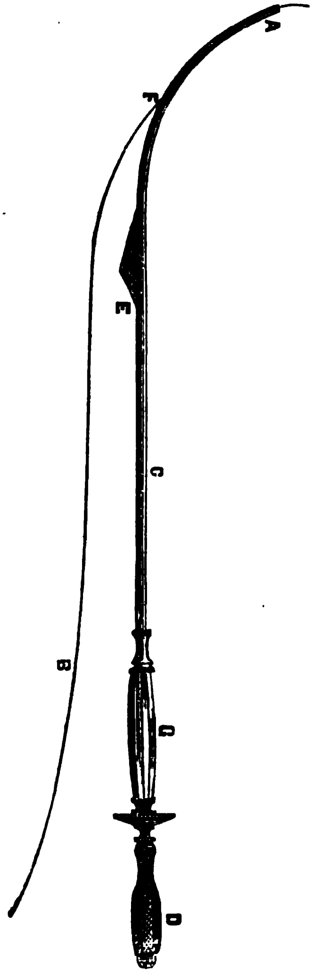
May 9th. The rectum was to-day explored by means of a speculum, and no trace of the piles could be discovered, except three nodules of cuticle, each the size of a shrivelled currant.—*Dublin Journal of Medical Science, June* 1874, *p.* 505.

ORGANS OF URINE AND GENERATION.

68.—DESCRIPTION OF A CATHETER URETHROTOME WITH CONDUCTING BOUGIE.

By W. F. Teevan, Esq., B.A., Surgeon to the West London Hospital and to the St. Peter's Hospital.

Of the countless number of urethrotomes which have been invented, but few remain in use at the present day, and even to the majority of the survivors exception must be taken, as they are wanting in two important particulars. Firstly, when passed up the urethra they do not proclaim their situation; they go somewhere, it is true, but the locality may be the rectum, false sac, or bladder. A distinguished surgeon performed urethrotomy to his entire satisfaction, passed a large instrument after the operation, and left the patient progressing most satisfactorily. But a short time had elapsed when the surgeon was surprised to see his patient driving up to his house, and on enquiring the object of his visit, he ascertained, to his chagrin, that the patient had come to demonstrate to him that he had performed recto-urethrotomy. Then, again, most of the urethrotomes are so large at their vesical extremity that they cannot be used unless the urethra have previously been dilated up to a certain calibre. This remark especially applies to those urethrotomes that divide from behind forwards. For a urethrotome to be a safe and efficient instrument for the division of tight strictures in the deeper portion of the urethra, it must possess two important qualities. Firstly, its vesical extremity must be so fine that it can be introduced through very tight strictures. It consequently follows that the urethrotome must be one which divides from before backwards; for if the stricture be capacious enough to permit an instrument to pass which cuts from behind forwards, the indication for any operation is doubtful, for if we have dilated the urethra up to half its natural calibre, why should we not persevere with the treatment which has been so successful, and that, too, in the worst and most troublesome stage of the complaint? What we want is to save time in certain cases where patients have, for instance, to go to sea suddenly, and where time does not permit of a course of treatment by gradual dilatation. We therefore require a urethrotome which is capable of setting to work immediately the smallest bougie has been passed. Secondly, it must proclaim its position unmistakably. Now, most urethrotomes lack one or other of the above essentials. Of those instruments which divide from before backwards, two stand out prominently—i.e., the urethrotome which was invented by M. Bonnet, of Lyons, and the one which bears M. Maisonneuve's name. Of the first one it may be said that it lacked the first quality which I have indicated as necessary, but possessed the second one, whereas the converse might be stated of the second urethrotome.



Five years ago a great advance was made in the construction of the urethrotome by Professor Gouley, of New York, who *tunneled the vesical end of his instrument so that it could be slid over and along the finest bougie already passed.* So far as I can ascertain, no English surgeon had ever heard of such a thing as a tunneled catheter or urethrotome until it was sent to him from the other side of the Atlantic, and I consider that Professor Gouley's invention marked an era in the surgery of the urinary organs. He, for instance, has converted that dumb and consequently unsafe instrument which is called "Syme's staff" into *a conductor which tells the surgeon where it has gone to*, so that external urethrotomy can now be performed with a certainty hitherto unattainable, and also extended to desperate cases which formerly were beyond its reach.

In the Lancet for July 5th, 1873, I gave a description of a catheter with a conducting bougie founded on Professor Gouley's principle, but differing in some respects from his; and I shortly afterwards conceived the idea of adapting the vesical third of the instrument to the urethrotome, in order to endow it with safety and a more extended sphere of usefulness. The instrument is composed of a very slender olivary whalebone bougie (see woodcut, B), not so large as a No. ¼, which is first of all introduced, or wriggled I would rather say, into the bladder apparently, when the catheter (A C) with a handle (G) is slid over and along the bougie (B), which emerges from the catheter through the slit which extends from the handle to the point (F). If the bougie have been passed successfully into the bladder, urine will of course flow from the end of the catheter; but if it should not do so, the catheter may yet be in the bladder, for the slit may have permitted some blood or mucus to block up the tube, and it is therefore necessary to pass the bougie through the whole length of the catheter to clear its interior. When it has been proved that the instrument is in the bladder, the knife (E D) may be slid along the catheter firmly and slowly, and the stricture divided. The apex of the blade is blunt, so that it will usually keep the wall of the urethra away from the anterior side of the triangular knife, which is the only edge that cuts; whereas Maisonneuve's blade cuts going in and coming out, thus giving rise to M. Civiale's objection that the former surgeon's urethrotome "promenaded" the urethra, cutting here and there. If the surgeon consider that the urethra upon which he is about to operate will resent the introduction of the knife and embrace it tightly, it is well then to sheathe the cutting edge with some wax, so as to protect the healthy urethra; or, what is still better, to adapt Mr. Donald Napier's recommendation as to the use of cacao-butter. It would thus appear that the instrument I have described realizes two great desiderata—safety and an extensive sphere of usefulness. Inasmuch as the vesical extremity of the catheter tapers to the size of No. 1, English, there are but few strictures to which it is not applicable; and as the surgeon does not use the knife till he has *proved* that the catheter is in the bladder, it will prevent a repetition of such *petits désagréments* as promenades into a false passage on the rectum.—*Lancet, May* 23, 1874, *p.* 724.

69.—URETHROTOMES FOR NARROW STRICTURES.

By BERKELEY HILL, Esq., Surgeon to University College Hospital.

In the Lancet for May 23rd [see preceding article,] Mr. Teevan describes an instrument he has devised for cutting narrow strictures. It is Maisonneuve's urethrotome introduced in a manner different from that adopted by Maisonneuve himself. As Mr. Teevan appears to be unaware that I showed to the British Medical Association at its congress in August last a urethrotome for cutting very narrow strictures, the mode of introducing which is precisely that employed by Mr. Teevan, I venture to present a comparison of the two instruments, as I believe mine to be free from the objections that have led many surgeons to discard Maisonneuve's instrument for some years past. Before doing so, I may remark that believers in cutting or splitting strictures of certain kinds may congratulate themselves that Mr. Teevan, who has not infrequently advocated gradual dilatation by flexible bougies as the sole safe and efficient method, has at last turned his attention to cutting. However, this by the way. The contrivance for introducing this urethrotome—namely, by slipping its point, which is perforated by a "tunnel" or eye, along a whalebone bougie previously passed throught he stricture, is attributed by Mr. Teevan to Dr. Gouley, of New York; I believe, however, that Dr. Van Buren, the eminent surgeon of that city, whose assistant Gouley was, is really the originator of the idea, though it has been adopted and perfected by Dr. Gouley. Whoever is the inventor, the plan has been familiar to those who give attention to urethral affections for some years, and being no novelty, I laid no stress upon it when describing my urethrotome to the Association.

The objections to Maisonneuve's mode, which is adopted by Mr. Teevan, of applying the cutting edge to the stricture, are—first, that the sharp edge of the incisor is passed down the urethra without protection. It is true that the healthy elastic part escapes, or is only slightly wounded, by the cutting edge, and the amount of mischief produced is usually not serious. But the second defect is most important; the knife attacks the stricture from before backwards, and it is almost impossible to prevent the stricture from being pushed back along the staff, and only partly divided, so that when the partial incision has healed the stricture is as bad as ever. Mr. Teevan suggests that the healthy part of the urethra can be shielded by covering the knife with cocoa butter, and this may be a sufficient guard; but the main objection still remains, that of cutting from before backwards--a plan which has been proved over and over again to be quite unsatisfactory. Bearing this in mind, I was able, by Mr. Coxeter's ingenuity—for this part of the instrument is entirely his,—to get a mode of passing the cutting edge through the stricture *before* the incision commenced, and thus cutting from behind forwards, or from the bladder towards the meatus. The description of my instrument was published as part of the proceedings of the surgical section of the British Medical Association in the Journal for Nov. 29th, 1873, and is briefly as follows:—A whalebone bougie, less than one-fourth of No. 1 catheter in diameter, is passed through the stricture to the bladder; along this the tunneled eye of the urethrotome is threaded, and the instrument conducted down to the stricture, and through that to the bladder. If the operator is in doubt about the position of the bougie, he may reassure himself by running a No. ½ catheter along the whalebone guide, and, having allowed urine to escape, withdrawing the catheter, leaving the guide *in situ*, on which to pass the staff. When the staff is passed fairly through the stricture, a slender rod, carrying a knife at its end, is pushed along the interior of the staff until the point of the knife reaches a short incline, which turns it out against the wall of the urethra just behind the stricture (see A in the woodcut, *Retrospect*, vol. lxix., p. 252), the limits of the stricture having been previously ascertained by a manœuvre of a very simple kind. When the knife is in place, the whole instrument is drawn forwards, and the cutting edge is carried along the floor of the urethra to any depth required short of half an inch, the depth of the incision being regulated by a screw at the handle. Thus the knife is wholly contained within the staff until it is projected therefrom behind the stricture, and can be drawn in again as soon as it has traversed the stricture. Nor is the instrument large: at its greatest width it is less than a No. 2 catheter, and at its point is considerably smaller. Mr. Teevan does not mention the calibre of the staff part of his urethrotome, though he states that the curved end has the thickness of a No. 1 catheter. But the straight grooved part which carries the Maisonneuve knife cannot be much less than a No. 2 catheter. Mr. Teevan takes credit for his instrument that it does not, like Maisonneuve's, cut on coming out as well as when going in. Now Maisonneuve at first did not make his instrument cut while being withdrawn. and added this power in order to supplement the imperfect dividing action of the knife when only pushed against the stricture. Thus Mr. Teevan's modification is still open to Civiale's objection that the Maisonneuve knife "promenades the urethra, cutting here and there;" it only cuts a little less in its "promenade" than does the more finished and elaborate instrument of Maisonneuve.

Having pointed out that while equally adapted for narrow strictures, our instruments differ in the mode they incise, and, as I believe, much to the advantage of my own, I should like to add a few words on a difficulty in using the guide-bougie and tunneled catheter which longer experience has taught me, but which I have not yet succeeded in altogether overcoming. I am led to do this because neither Dr. Gouley nor Mr. Teevan mentions it. Indeed, the reader who has not tried to pass tunneled catheters or guide-bougies would suppose the proceeding to be a most simple one. This is the difficulty. Old strictures are often very irregular or tortuous internally, and it is no easy matter, sometimes, when they are also very narrow, to "wriggle," as Mr. Teevan well expresses it, the stiffish whalebone through the stricture; a limp bougie will not serve for a guide. Nevertheless, this is perhaps only a question of time and patience. But, worse still, the tunnel of the staff is occasionally so locked on the whalebone in the tortuous stricture, that it cannot be pushed along with any justifiable amount of force. I have once cut the whalebone short off at the stricture, leaving half in the deeper part of the urethra, where it remained for two or three days, until its presence widened the stricture sufficiently to allow the stream to wash it out. No harm ensued, and the urethra was dilated without difficulty, but the accident was at the least not pleasant to the operator. On another occasion I split up the whalebone into long shreds by trying to force the catheter along it. To avoid this, when there is difficulty in passing the staff along the guide I content myself with tying in the guide for one or two days, till its presence has smoothed or widened the narrow part, and the staff will slide through easily. I found by inquiry of my friend, Dr. Bumstead, when he was in England last summer, that the New York surgeons also thus evade the difficulty. But one must confess that this necessity very materially lessens the brilliancy and rapidity of the mode of treatment.—*Lancet*, *June* 13, 1874, *p.* 830.

70.—LANDING-NET FOR REMOVING A STONE OR STONES FROM THE BLADDER.

By Richard Davy, Esq., Surgeon to the Westminster Hospital.

During the operation of lithotomy, I have been often hurt to see a stone crushed by removal by the forceps (and thereby a specimen lost), or have waited expectantly to see fragments removed by the scoop; so I venture to suggest that we may gain a wrinkle from fishermen, and use a net for extractive purposes.

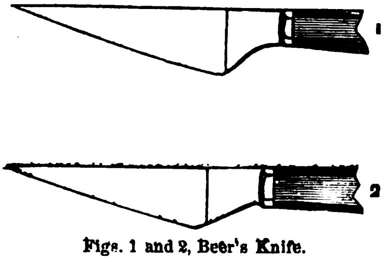
The net (of silk or canvas, according to the size of the stones) is made to slide on a curved wire, bent on the principle of midwifery forceps. After the cut has been made into the bladder, the net is introduced through the wound to the side of the stone or fragments; and, by gently tickling the stone and manipulating the net, the stone or fragments (coaxed in) are caught on withdrawal. These stones *plus* silk are the occupants of the perineal wound instead of stone *plus* forceps or scoop. From the dead bladder I have removed stones fifty times by the net; yet, useful as this net is, it is not so important an ally as the law of gravitation. Savigny and Co. will show this net to surgeons.—*British Med. Journal*, *June* 27, 1874, *p.* 842.

AFFECTIONS OF THE EYE.

71.—A MODIFIED CATARACT KNIFE.

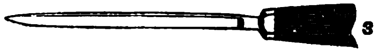
By Jabez Hogg, Esq., Surgeon to the Royal Westminster Ophthalmic Hospital, &c.

The size and form of knife used in making the section in the operation for cataract is a matter of more importance than may at first sight appear. During my early acquaintance with eye surgery, and for many years after I became connected with the Royal Westminster Ophthalmic Hospital, the knife employ-



Figs. 1 and 2, Beer's Knife.

ed by preference over that of any other was the triangular knife, known as "Beer's knife." Mr. Guthrie looked upon it as the perfection of a knife; for my own part, and perhaps from long handling of small delicately-balanced knives in microscopical dissections, I always thought it rather too broad and too large, especially towards the base; the angle it subtends is decidedly too great. Three or four years since, on reading a paper before the Medical Society of London, I exhibited a modified narrow-bladed cataract-knife to the Society. The knife was something between a small Wenzel and a narrow-bladed Graefe, and at the same time I pointed out what I considered the defects of the latter, namely, its extreme thinness and its liability to bend if made to traverse a cornea somewhat degenerated, one undergoing arthritic change, *arcus senilis*. I notice, also, that when Von Graefe's thin knife enters the cornea too obliquely, the point may pass through the lamellæ some distance without entering the anterior chamber, and thus miss making a counter puncture exactly where we wish it to be. The success of the operation is occasionally somewhat marred in this way, for the corneal section will be too small to admit of an easy delivery of the lens. This is, however, an accident which does not often occur; nevertheless, for the reasons I have given, I requested Messrs. Louis Blaise & Co., of St. James's Street, to make me a knife, a *modified* Graefe, the blade of which is stouter than his, and in shape partakes of Wenzel's, being of course very much smaller. I place it for comparison, side by side with those of Graefe and Wenzel. I believe those who may honour me by making trial of this knife will be satisfied with its superiority. One word with regard to the speculum employed. I have so often found the patient, by the action of the muscles, able to close the eyelids during the operation, that to obviate this I have had a screw collar arranged to act upon the jointed crossbar; this gives a steadiness and amount of resistance which will be found of value in operations of the eye.—*Medical Press and Circular, April* 29, 1874, *p.* 351.



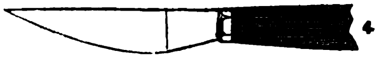


Fig. 3, Graefe's.

Fig. 4, Wenzel.

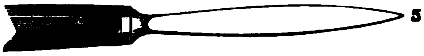


Fig. 5, Modified Graefe Knife.

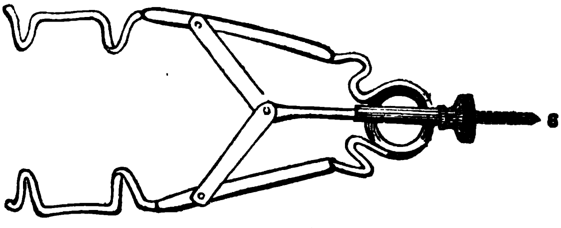
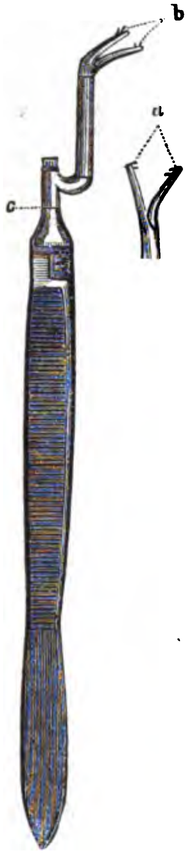


Fig. 6, Speculum.

72.—A NEW FORCEPS FOR TEARING THROUGH OPAQUE CAPSULE.

By Charles Higgens, Esq., Assistant Ophthalmic Surgeon to Guy's Hospital; Surgeon to the Central London Ophthalmic Hospital.



The instrument depicted in the woodcut is made for the purpose of tearing through those dense opaque membranes not unfrequently met with occupying the pupillary area of an eye after cataract extraction, or more commonly when the lens matter has been removed by absorption following upon an injury or operation.

One of the figures shows the whole instrument; the other, representing only its lower extremity, is introduced expressly to show the arrangement of the teeth (a). These project from the lower surface of each branch vulsellum-like, and will seize and tear through anything, however tough and tensely stretched across the pupillary area, leaving a good clear opening where the densest membrane previously existed.

The branches of the instrument, together with its shank, are gilded as far as (c), in order to make it plainly visible when introduced into the anterior chamber.

Any dragging operation upon opaque capsule, as is well known, is fraught with the greatest danger to the eye; nevertheless we are bound to make an attempt to restore vision in spite of risks. It is for cases that cannot be remedied by the use of needles or other means that these forceps are designed; and I venture to think they will be found to answer their purpose admirably.

The instrument is made by Messrs. Krohne and Sesemann, 8, Duke Street, Manchester Square.—*Lancet, August* 8, 1874.

73.—ON THE TREATMENT OF CATARACT PREVIOUSLY TO OPERATION.

By Bowater J. Vernon, Esq.

(Being some remarks upon a paper by Mr. Critchett.)

In the Annales d'Oculistique (Sept. and Oct., 1873) are some valuable notes on the question, one not very fully treated of in standard works: Is it the duty of the surgeon to warn his patient of the nature of the disease when it has but barely commenced, and when a long and anxious time must elapse before any operation can be attempted? Mr. Critchett, even at the risk of appearing to overlook the true nature of the case, would be reticent, knowing how the thought of impending blindness from cataract is dreaded.

Another question which has to be met is, whether there is any cure, any means of removal by medicine or otherwise, short of an operation. It is at this time that patients with cataracts are apt to fall into the power of quacks and charlatans. Though the answer to this question must be a decided negative, yet there is much that may be done to relieve the present discomfort; for instance, the amount of light may be regulated by the employment of proper glasses, and by the continued use of atropine in solution. It will be well too that the patient should be seen at regular intervals, in case the commencing cataract may be the precursor of some more serious condition, such as glaucoma; and by degrees the knowledge that the increasing dimness of vision is due to cataract and to nothing worse, may in itself be a reason for looking hopefully to the future.

The time for operative interference has arrived when—

1. The cataract is completely matured;

2. The lens of the second eye is always so opaque that the patient is on the point of having to relinquish his occupation.

The social position of the patient must be borne in mind; but the second condition is to be insisted upon, because surgeons of the old school used to delay till blindness was complete, and there is a tendency amongst some surgeons of the present day to adopt the other extreme and to attack every single cataract at once.

There are some cases of cataract which will, Mr. Critchett thinks, always give rise to difference of opinion, and which indeed are embarrassing; viz., when there is very great impairment of vision while the cataract is yet far from maturity. Is the surgeon to operate upon an immature lens? or is he to hasten maturity by some operation? The latter course Mr. Critchett believes to be full of danger; and, except in cases where the cortical layers of the lens are much involved it is, he thinks, the duty of the surgeon and in the patient's interest to wait. In the cases where one is cataractous and the other quite sound, Mr. Critchett thinks that in young subjects it is well to operate, but in elderly patients, while one eye retains its perfect power, the cataract in the other should not be interfered with.—*London Medical Record, May* 20, 1874, *p.* 310.

74.—THE OPERATION OF REPOSITIO CILIORUM FOR TRICHIASIS.

By Dr. D. Argyll Robertson, Ophthalmic Surgeon to the Royal Infirmary, Edinburgh.

The operation of repositio ciliorum, also termed illaqueatio, was known to Celsus, and by him carefully described in his well-known work. Celsus himself, however, expresses an unfavourable opinion of the operation; and this appears to have been shared by his contemporaries, as this method of treating trichiasis fell into disuse, and was completely abandoned until about twelve years ago, when Dr. Snellen of Utrecht re-introduced it. Notwithstanding Dr. Snellen's advocacy, the operation has not been very extensively adopted, and is scarcely referred to in any of the standard works on diseases of the eye. As it is, in my opinion, an operation of great value when applied to suitable cases, I have deemed advisable to direct again the attention of the profession to it. The principle of the operation consists essentially in causing the offending eyelashes to be mechanically turned away from the eye, and made to grow more or less in the proper direction by making them pass under a narrow bridge of skin. The following is the method of performing the operation:—A very fine curved needle has the two extremities of a very fine waxed silk ligature (or hair, as Celsus directs) passed through its eye. The needle, being firmly grasped by suitable forceps, is then passed through a narrow fold of skin at the very margin of the lid, close to one of the inverted eyelashes. The point of introduction should be external to the point of emergence of the eyelash, but as close to it as possible; and the needle should be brought out after passing about ¾‴ or 1‴ under the skin. The needle and ligature should be drawn through until a small loop alone remains, when, by means of a fine pair of forceps, the eyelash is passed through the loop. Traction is then made on the ligature, and the loop with entangled eyelash, is drawn through the tunnel of the skin.

The other misdirected eyelashes are similarly treated. The chief difficulty in the performance of the operation consists in getting the eyelash entangled in the loop of the ligature, as the bleeding which occurs from the points of puncture causes the eyelashes to be matted together, or to adhere to the ligature, and the misdirected eyelash is almost always enveloped by a small clot. When this source of annoyance is troublesome, it is advisable to wait a minute or two after the passage of the needle before proceeding to the ensnaring of the eyelash. In some nervous patients, I have found it advisable to introduce the lid-forceps or clamp, so as to stretch the lid and enable it to be more readily fixed, and thus ensure accuracy in the points of introduction and emergence of the needle. One thing that must be carefully attended to is to make the point of introduction of the needle as close to the offending eyelash as possible, as, if it be made at a little distance, the resiliency of the hair causes it gradually to emerge from the tunnel and resume its former position.

Very little irritation follows this operation, and no special after-treatment is necessary. The patient, however, must be warned against touching or rubbing the eyelashes for twenty-four hours after the operation, as he might thus force the eyelashes back out of their new channel.

My attention was first directed to this operation by a short notice of a paper on it by Dr. Schulek, in the Annales d'Oculistique for 1871; and, since then, I have performed it in about a dozen cases. In all it has been attended with excellent results, except the first time I employed it, when I made the mistake of using too coarse a needle, and also attempted to pass several of the eyelashes through one of the tunnels. The result was that most of the eyelashes freed themselves from restraint and returned to their original position. I subsequently operated on this case with success.

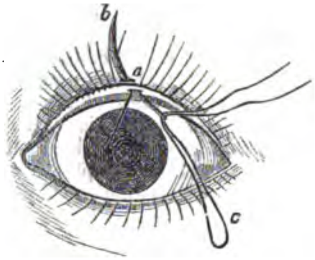


Fig. 1 represents the passage of the needle, armed with the ligature, under a band of skin close to the point of emergence of an inverted eyelash. (The direction of the needle has been represented a little oblique, not to complicate the diagram.)

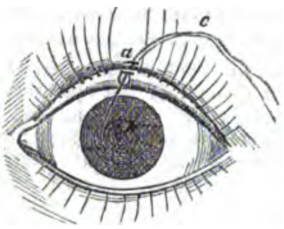


Fig. 2 represents the misdirected eyelash involved in the loop of the ligature.

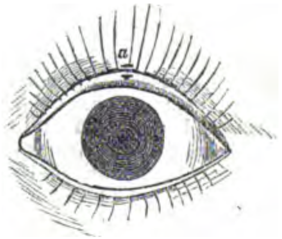


Fig. 3 represents the eyelash in its altered position.

On examining cases that have been successfully operated upon, after the lapse of several months, no eyelashes are found passing under bridges or bands of skin, and yet all the eyelashes are properly directed. I have not yet been able to satisfy myself of the process by which this state of matters is attained. In some cases, particularly where the bridge of skin under which the eyelash has been passed is very thin, I believe the eyelash ulcerates its way through; in others, again, it is possible that the eyelash gradually slips back out of the tunnel, but, having been for some time kept in a proper direction, has a normal curvature given to it, and a proper direction imparted to the follicle which produces it, which direction they retain. I believe, however, that in the majority of instances, the eyelashes after a time are shed, and fall out of the tunnel, and the new ones that are generated grow in the normal plane.

This operation is, unfortunately, only applicable to those cases of partial trichiasis in which the eyelashes are few in number and of considerable size. In such cases it is, I am convinced, much superior to any other method of treatment employed at the present time. Where, however, the trichiasis is general, this method of operating would be excessively tedious and ineffectual, owing to the fineness of some of the inverted lashes. Where, on the other hand, the misdirected hairs are few and fine, the operation described is inapplicable, as the difficulty of getting them entangled in the loop of the ligature is much increased; and, even if successfully accomplished, and the eyelashes drawn into the tunnel, they are very apt to free themselves, not being sufficiently firmly held in their new position.

The reason why the operation in ancient times fell into disuse, is evidently to be found in the fact that it was then employed in all forms of trichiasis; and, as suitable cases form only a comparatively small proportion of the whole, the general results of the operation could not have been satisfactory.

To Dr. Snellen great credit is due for several ingenious operations upon the eyelids he has devised, as well as for the reintroduction of this old operation. —*Edinburgh Medical Journal, May,* 1874, *p.* 988.

75.—ON OPENING THE CAPSULE BEFORE MAKING THE CORNEAL SECTION IN THE OPERATION FOR SENILE CATARACT.

By Spencer Watson, Esq., London.

One step of the operation for extraction of senile cataract—the theoretically simple process of opening the capsule—presents some difficulty and not a little danger. However fully dilated the pupil may have been before making the corneal section, no sooner is this step completed than the aqueous, if it has not already escaped, rushes out, and the pupil contracts, the iris coming of necessity in contact with the cornea. Supposing the opperation to be Graefe's, the next step is to excise a piece of iris, and then comes the laceration of the capsule. The removal of a piece of iris facilitates this step, but at the same time makes it more dangerous. It opens the space for the admission of the cystitome, and allows it to have a wide range of action without coming in contact with the iris; but it also much increases the risk of dislocating the lens and causing prolapse of the vitreous. If the capsule happen to be tough, and the suspensory ligament weak and friable, this accident is very likely to happen; and especially if the fixing forceps is being used, and the patient is under an anæsthetic. If, however, the operation is the old flap or any other operation not necessitating the removal of a piece of iris, the difficulty of lacerating the capsule freely without bringing the cystitome into contact with the iris is almost insurmountable. But this is not the only danger. The point of the cystitome must, in order to make a free opening of the capsule, pass behind the iris, and it is then of course out of sight, so that its movements can only be guessed at by observing the length and motion of the uncovered portion. Hence injurious friction of the uveal surface may be set up, or, on the other hand, an insufficient opening may be made in the capsule, either of which errors may lead to subsequent disasters. The use of Wecker's cystitome forceps only renders the danger still greater.

Contrasted with these methods let us consider the plan of opening the capsule by means of a curved cataract-needle, introduced through the cornea before the corneal section has been made. This operation was advocated by M. Correnti, of Florence, in 1872. He thinks the chief advantage is in the infiltration of the aqueous humour between the capsule and the lens, and that this facilitates the subsequent escape of the cataract; and he was very well satisfied with the result in several operations by Graefe's plan, in which he had tried this preliminary laceration of the capsule (see Annales d'Oculistique for September-October, 1872).

Having operated in this way in seven cases with satisfactory results, I have come to the conclusion that it offers the following advantages in practice:—

1. The pupil, if previously dilated by atropine, remains dilated, and the iris, therefore, is out of the way of the needle.

2. The pupillary area is clearly seen, and the movements of the needle, therefore, can be guided into the precise positions required.

3. The nature of the cataract is more clearly ascertained than can be done by means of focal illumination or ophthalmoscopic observation. The density and thickness of the cortex, and its amount relative to the bulk of the nucleus, can be more satisfactorily made out.

4. There is no danger of dislocating the lens, or of rupturing the suspensory ligament and so leading to almost certain loss of vitreous.

5. The information derived from the appearance of the cataract, and especially of its cortex, after lacerating the capsule, enables the operator to modify the subsequent steps in accordance with the varying bulk or density of the cataract or its capsule. If, for example, it is found that the nucleus is very large and dense, a large corneal section will have to be made, and an iredectomy also if there is any difficulty about the escape of the lens with moderate pressure. If, on the other hand, the cataract is composed of a bulky cortex with a very small nucleus, a small corneal incision will suffice.

If the capsule be tough and thickened by inflammatory exudation, it may be desirable to extract the cataract within its capsule, and this can be done by modifications of the ordinary methods. With a cataract of the Morgagnian variety, having a fluid milky cortex and small nucleus, it will be better to extract it in its capsule; and this condition could be easily ascertained by the introduction of the needle before making the corneal section. It is not so easy to make the diagnosis of a Morgagnian cataract by the ordinary methods.

The method of operating is as follows:—If the patient be not under the influence of an anæsthetic it will be possible, by fixing the eye in the manner employed in ordinary discission operations, to dispense with the use of the speculum and fixing forceps during the first step. It is an advantage to do without the fixing forceps if possible, as there is then less likelihood of an escape of aqueous humour on withdrawing the needle. There is nevertheless an advantage attending the use of the fixing forceps—viz., that the needle can be used with more freedom and precision. The pupil should have been previously fully dilated by atropine. The needle used should be slightly curved near the point, and should be the finest possible in the shank. It is entered very obliquely at the lower and outer quadrant about 1‴ from the corneal margin. Its point is then pressed against the centre of the capsule, and a puncture made with a view to ascertain the consistency and nature of the cortex. This done, the operator decides whether to remove the cataract in its capsule or not. If he decides to lacerate the capsule, the point of the needle is carried round the upper and inner margin of the lens with a semicircular sweep, and then across the lower and inner margin with a second sweep, the two semicircles being joined above and below by separate movements of the needle if necessary. It is then withdrawn slowly and carefully; and if its passage through the corneal layers has been sufficiently oblique, there will be no loss of aqueous humour, and the pupil will remain dilated as before. If, however, aqueous has unavoidably been lost, the operation had better be completed on the following day, or even a week later. The subsequent steps of the operation will depend upon the information obtained in the first step. Any of the numerous modifications of Graefe's operation, or the old flap operation, or the Warlomont or Liebreich operation, may be employed according to the supposed suitability of the particular method to the case. Having, however, satisfied ourselves that the capsule is freely lacerated, it will generally be found that a much smaller corneal section will be necessary than if this has not been previously done; for the separation of the capsule from the cortex, and of this again in some measure from the nucleus, will have been favoured by the admission of the aqueous, and hence a much less amount of pressure will be required, and a smaller opening will be needed for its extraction. The only possible objection that is likely to be urged against this operation is that it may occasionally cause an escape of the aqueous humour, and so delay the completion of the operation; but this is an objection that will not have much weight. It is not likely to happen often, and when it does is of no consequence. In order to avoid it, it is necessary to have a very fine needle and to enter it very obliquely through the corneal layers. Perhaps some may object that the capsule cannot be so freely lacerated in this way, from the limitation of the movements of the needle; but this is a matter of experience, and it is practically not a serious obstacle to the success of the operation. It is essential, however, that the needle should be introduced on the temporal side of the cornea, either in the upper or lower quadrant; and hence the operator, if standing behind his patient, must use the left hand for the left eye, and *vice versâ*. If not ambidextrous, he had better, on operating upon the left eye, stand facing his patient and use his right, but this is hardly so convenient a position for the subsequent steps of the operation, and does not allow of so good a rest for the hand in this step as if the operator were behind. Each operator will find out for himself the most convenient and easy attitude, but for the ambidextrous there can be no doubt that the position behind the recumbent patient offers many advantages throughout the operation, and especially in the laceration of the capsule.—*Med. Times and Gazette, May* 9, 1874, *p.* 499.

76.—LACHRYMAL FISTULA CURED BY A SINGLE INJECTION OF TINCTURE OF IODINE.

This case is recorded by Dr. del Toro in the Cronica Oftalmologica de Cadiz. The patient, a young woman of twenty-two, had been affected for three years with a fistula of the lachrymal sac of the right eye, which took place after the formation of an abscess. Pure tincture of iodine was injected by means of one of Anel's syringes. Inflammation of the internal membrane of the sac, extending to the conjunctiva, was the result. Fomentations with a solution of borate of soda were applied, and complete cure was effected in the space of four or five days. Dr. Toro mentions that the existence of conjunctivitis confined to one eye ought always to induce the surgeon to suspect either the presence or the imminence of lachrymal fistula.—*Lancet, June* 6, 1874, *p.* 804.

77.—THE ADMINISTRATION OF CROTON CHLORAL HYDRATE IN INTOLERANCE OF LIGHT.

(Cases under the care of Mr. **Bader**, at Guy's Hospital.)

Case 1.—Anne B., aged 18, was admitted with corneo-iritis of both eyes and great photophobia. She commenced the croton chloral hydrate on December 24, 1873, taking five grains three times a day. Daturin of the strength of one grain to one ounce of water to be applied six times in one hour every evening. On January 16, 1874, all the intolerance had subsided; and on the 27th she was discharged, having had no return of the photophobia.

Case 2.—Mary C., aged 11, was admitted with pannus with granulations. Commenced croton chloral hydrate grs. v. three times a day on January 16, 1874. Her left pupil was very contracted, and intolerance was so great she could hardly bear to open her eyes. On the 23rd, there being no improvement, the dose was increased to ten grains. On the 31st the dose was increased to twelve grains four times a day, after which she was slightly better. Slight improvement continued until February 14, when the dose was increased to fifteen grains three times a day. On the 16th she omitted the medicine purposely, and the next day was not so well. Medicine omitted altogether on the 24th, and greenstone applied to lids.

Case 3.—Mary S., aged 19, admitted with corneo-iritis with great photophobia. Commenced croton chloral hydrate on December 24, 1873—dose, grs. v. ter die sum. On January 1, 1874, intolerance had greatly subsided. On the 18th she could look at the light without flinching. On the 23rd all intolerance had subsided, and she was discharged on February 2, without any return of the photophobia.

Case 4.—Florence B., aged 8, admitted with corneo-iritis, epiphora, and photophobia. Commenced croton chloral hydrate gr. v. ter die sum., on January 13, 1874. On the 17th was able to look at the light. Improvement continued until February 6th, when she was not so well on account of the fog, which was very dense. Dose increased to ten grains ter die. On the 16th almost all the intolerance had subsided, so the medicine was discontinued. On the 18th she was not so well, so the medicine, five grains ter die, was again given, and on March 2nd all the intolerance had subsided.

Case 5.—Celia S., aged 24, admitted with closed pupils, ciliary redness, and photophobia, tension—1, the left eye being the worst. Commenced croton chloral hydrate January 13th, 1874, gr. x. ter die. On the 17th there was slight improvement. On the 23rd she could look at the light with both eyes, but the left still continued worse than the right. On the 27th all the intolerance had subsided in the right eye. On February 9 almost all intolerance had subsided, and she went out of the hospital.

Case 6.—Mary D., aged 16, admitted with pannus with granulations and photophobia. Commenced croton chloral hydrate January 21, 1874, gr. x. ter die. On the 23rd photophobia had subsided considerably. On February 9 intolerance had greatly improved; dose increased to fifteen grains ter die. On the 14th there was very little intolerance. On March 2nd medicine omitted, and lids touched with greenstone.

Case 7.—Ellen B., aged 7, admitted with corneitis and excessive photophobia. Commenced croton chloral hydrate gr. viij. ter die, February 5, 1874. On the 9th there was a very marked improvement in the intolerance of light, which continued until the 13th, when the photophobia returned with increased severity. On March 2nd there was no improvement at all. Medicine continued.

Case 8.—Clara S., aged 15, admitted with corneo-iritis and great photophobia, so that she could not bear the slightest light. Commenced croton chloral hydrate gr. x. four times a day on February 10, 1874. On the next day there was a decided inprovement in the intolerance. On the 13th she complained of great pain in the head, so the medicine was discontinued. On the 16th she again took five grains ter die, after which the photophobia gradually lessened, and on March 2 there was very slight intolerance.

Case 9.—Mary B., aged 49, admitted December 30, 1873, with closed pupil, intolerance, and neuralgia over forehead. Commenced croton chloral hydrate gr. xv. ter die on February 6, 1874. On the 10th there was no improvement in intolerance, but pain in forehead was less. Increased the dose to twenty grains ter die. Intolerance did not subside, but pain in head grew less.

Case 10.—Julia B., aged 47, admitted February 28th, 1874, with intolerance of light, but no ocular changes. Commenced croton chloral hydrate gr. xv. ter die on March 1. She gradually improved, but photophobia did not entirely subside. Went out March 20.

Remarks.—It appears that only young people, and only those suffering from genuine syphilitic corneo-iritis, were benefited by the croton chloral hydrate. As regards the dose, I found that between five and ten grains was the most beneficial amount, although in one case I gave twenty grains four times a day without producing much good or any bad symptoms. All the patients complained of the nasty taste of the medicine, but in only one did it appear to produce any symptoms which caused me to stop giving it.—*Medical Times and Gazette, August* 8, 1874, *p.* 145.

78.—A PROTECTIVE BANDAGE FOR THE EYE.

By F. BULLER, Esq., House-Surgeon, Royal London Ophthalmic Hospital.

In cases of gonorrhœal ophthalmia of one eye only, the first and most urgent duty of the medical attendant is to protect the other from contagion. For this purpose various devices have been proposed, but most of them, if not all, have been defective in one important particular—namely, the eye to be protected had also to be excluded; so that the unhappy patient, in addition to his other troubles, was condemned to grope in darkness throughout the duration of his distressing complaint. Under such circumstances very few persons will keep their hands away from the obnoxious appliance, and as a consequence the very means intended to secure safety become a source of danger.

[The following is a description of Mr. Buller's bandage.]

It consists of a square piece of macintosh into the centre of which a watch-glass is fastened, and of three strips of adhesive plaster. The macintosh is trimmed to fit the nose and forehead of the patient, and should extend across one side of the forehead about half an inch above the eyebrow, and downwards nearly to the tip of the nose, the nasal portion reaching a little beyond the median line.

The adhesive plaster (emplastrum resinæ of the Pharmacopœia answers very well) is *spread thickly* on doe-skin; and a strip, about an inch in width, and long enough to reach from just in front of one ear to a corresponding point on the opposite side, is applied along the upper border of the shield. The second strip may vary in width according to the height of the nose, and must be snipped in three or four places, in order that it may be adapted to the uneven surface upon which it rests, the lower part only slightly overlapping the edge of the shield. For additional security, a third and somewhat shorter strip is placed along the dorsum of the nose. The eye is thus completely protected by a waterproof shield, the upper and inner sides of which are firmly adherent to the skin of the forehead and nose, whilst the lower and outer borders are free, so that the eye is exposed to the air almost as freely as when an ordinary shade is worn. Moreover, the surfaces of the watch-glass being parallel, vision is not interfered with, and the patient is able to attend to the affected eye.

As the strips of adhesive plaster become softened in the course of a few days by the warmth and secretion of the skin, they require to be renewed. This may be done as often as necessary without any difficulty or danger of infecting the healthy eye. I have used this bandage in gonorrhœal ophthalmia, and in several cases of inoculation for pannus of one cornea, where the other was clear and would almost inevitably have perished in event of becoming infected. In every instance the healthy eye has enjoyed a perfect immunity from the terrible malady of its fellow.

The glass does not become dimmed by an accumulation of moisture from the conjunctiva and skin of the face, as seems to have been the case with Snellen's closely-fitting glass shield; nor does the protection afforded by the apparatus seem to be at all the less perfect in consequence of its outer and lower borders being free.

The shield may be obtained, at a small cost, from Messrs. Weiss and Co.—*Lancet, May* 16, 1874, *p.* 690.

AFFECTIONS OF THE SKIN, ETC.

79.—CARBOLIC ACID IN THE TREATMENT OF ECZEMA.

By Dr. J. G. Thornley.

Case 1.—F. G., a respectable married lady, æt. 48 years, had suffered from a patch of eczema on the inner side of the thigh for upwards of twelve years. On my first seeing the disease in question, it extended over a surface about twice the size of a crown-piece. The irritation and itching at times were intense, and in consequence, the part had been considerably torn and scratched; there was a copious discharge of an acrid, thin, and serous fluid. The fluid was so irritating as to give rise to inflammation of the surrounding skin wherever it came in contact with it. When scratching, the blood flowed freely, and the integument was cracked and fissured, so much so, as almost to constitute that form of the disease termed by the French, *eczema fendillé*, and by Dr. McCall Anderson, "eczema rimosum." The irritation and itching caused by this affection had been for years a source of great discomfort to this lady. Many practitioners had been consulted, and topical applications and internal treatment had been tried to a large extent. Amongst other remedies, arsenic, corrosive sublimate, and bark, and various preparations of iodine had been largely employed internally, while externally lotions, and unguents of zinc, alum, chloroform, hydrocyanic acid, and iodine had been used extensively.

The treatment was commenced by administering a purgative, and a bitter tonic to rectify the digestive organs, which were slightly out of order, and a lotion, as follows, was applied two or three times a day, the part having been first cleansed by carbolic acid soap and tepid water, in which was dissolved a little carbonate of soda:—℞. Acidi carbolici, ʒ iss.; glycerine, ℥ ss.; aquæ, ad ℥ vj. This lotion was applied by means of a sponge, the carbolic acid soap being used daily, and in less than ten days the improvement was visible, and in two months the affection had entirely disappeared, and since then has not shown the slightest symptom of returning.

Case 2.—This was a case of eczema rubrum, occurring in the wife of a labouring man. A considerable portion of surface in this case was attacked, there being several patches of the disease on the trunk and thigh, while the lower extremity, from the knee to the dorsum of the foot inclusive, was entirely covered by it. The vesicles were numerous, and exuded a large quantity of a clear, slightly viscid fluid. The integument on which the vesicles were seated was tumefied, and between the vesicles was tense, shining, and of a crimson-red colour, altogether presenting a very characteristic form of this affection. There was a considerable amount of pain, heat, and stiffness in the lower extremity, but no constitutional disturbance.

The treatment was commenced by administering a purgative, the leg to be sponged with tepid water, in which was dissolved ʒ ij. of sodæ bicarb. to the Oj. A weak carbolic acid lotion was then applied, but it was found that the lint stuck so tightly to the eczematous patches, owing to the amount of exudation, that the act of pulling it off irritated the skin. An ointment of ungt. zinci, with carbolic acid and chloroform, aa min. xx. to ℥ j. was applied, and the lotion, after a day or two, used as before. Under this treatment the disease gradually progressed until recovery was complete. I have treated several other cases of eczema after the above manner, and found the treatment successful, together with several cases of prurigo and lichen, in which almost the same treatment was pursued, with a like result.—*Medical Press and Circular*, *May* 20, 1874, *p*. 423.

80.—SUBCUTANEOUS INJECTION OF CARBOLIC ACID IN ERYSIPELAS.

Dr. Aufrecht of Magdeburg says, that, having last year under his care four cases of erysipelas of the limbs in old persons, in all of which treatment was unsuccessful, he was led to try the effect of carbolic acid. If erysipelas were the result of the entrance of minute organisms into the subcutaneous connective tissue and of their multiplication, and if carbolic acid had the property of destroying such germs, then, he argued, it should arrest the spread of erysipelas. To ascertain that the hypodermic injection of carbolic acid was harmless, he injected into his own subcutaneous tissue six decigrammes (about ten minims) of a one per cent. solution. No local or general disturbance followed. In July of last year, he applied this treatment in the case of a woman aged 56, with erysipelas of the forearm and hand, following a slight abrasion; and in January he used it in the case of a man aged 82, who had erysipelas of the leg after the breaking out of a cicatrised ulcer. In the first case, he injected carbolic acid night and morning for three consecutive days—making five injections in all; in the second, four injections in two days; they were made in the healthy subcutaneous tissue in the neighbourhood of the erysipelatous portion lying nearest to the body. The erysipelas did not spread in the direction of the part where the injection was made; but some isolated patches above the points first injected necessitated the more frequent repetition of the remedy. Not only was the erysipelas arrested, but the fever and the frequency of the pulse were reduced, and the general condition of the patients was improved. The erysipelatous swelling and redness diminished perceptibly, remaining only two days after the injection.—*British Medical Journal*, *April* 25, 1874, *p.* 550.

81.—ON GANGLION.

By Lambert H. Ormsby, Esq., Surgeon to the Meath Hospital, Dublin.

This is an encysted circumscribed swelling connected with the sheaths of the tendons passing in front and round the ankle-joint and other joints in the body. There are two kinds: 1. The circumscribed; 2. Diffused. This last is generally seen in the palm of the hand and in front of the wrist-joint, and frequently contains small bodies resembling melon seeds. The circumscribed is slow in its growth, and varies from the size of a walnut to that of a pigeon's egg. I have seen lately a man at the Meath Hospital, a soldier, æt. about 40, who, I might say, had a ganglionic kind of diathesis, for there was hardly a tendon passing near a joint that was not affected with a ganglion developed in its sheath, and in some cases two and even three on the same tendon. He said they had come on gradually. They are very common on the tendon passing in front of the ankle-joint, above or immediately below the anterior annular ligament: they are occasionally translucent, and contain a clear, glairy, white-of-egg fluid. They are treated in many different ways: on the back of the wrist, the old barbarous way was—1. To burst or squash them with the back of a book, by striking the summit of the ganglion with great violence and rupturing the sac and allowing the fluid to escape in the areolar tissue and along the course of the tendon, and ultimately be absorbed. 2. Dividing the wall of the sac subcutaneously with a sharp tenotome, and allowing the fluid to escape in the same manner as before mentioned; 3. Cutting into it, and letting out the contents; 4. Injections with tincture of iodine, one part to two parts of water; 5. Pressure with a convenient permanent compress. Firm pressure with the two thumbs for a short time causes them to disappear, but they appear again and become as large as ever in a few days.—*Medical Press and Circular*, *April* 22, 1874, *p.* 332.

82.—ON PROVISIONAL BURSÆ, BUNIONS, CORNS, &c.

By Lambert H. Ormsby, Esq., Surgeon to the Meath Hospital, Dublin.

We frequently see in close proximity to joints where undue pressure is applied small bursæ developed, and often attain a considerable size producing deformity; this occurs often at the metatarso-phalangeal joint of the great toe, and at its inner side. This enlargement is termed *bunion;* it is very painful and annoying, preventing the person thus affected the means of locomotion; the integument over this swelling assumes a dusky red colour, and is considerably increased in size and temperature; the pain is increased by a continuance of the pressure; this affection has the effect of causing the transverse diameter of the foot to be greatly augmented. The same enlargement, with bursal development, is found on the outside of the foot, at the metatarso-phalangeal joint of the fifth, or little toe. When this inflammatory process passes away, there often results a permanent enlargement and thickening of the integument over the joint, producing what is termed by chiropodists a callosity, which is exceedingly painful to the touch, or when undue pressure is applied. Closely allied to these bursæ are what are termed corns, which are so common on the toes of some people, and particularly on those who are in the habit of wearing tight boots. They seem to be nothing more nor less than a thickened state of the cuticle, and may also occur between the toes, when they are called soft corns, and also they are found on the sole of the foot, where they are at times most painful. We often find a small cavity at the base of these callosities when we pare them down deep enough, and the base, by constant picking, cutting, and paring, the corn becomes inflamed, and sometimes suppurates.

The treatment for these two affections agrees very much in at once removing the tight boots and undue pressure, and soft pliable leather shoes recommended, applying simple cold-water dressings to the painful bunion; in the inflammatory stage, if suppuration occurs in its cavity, it should be cut into by early incision. To prevent undue pressure various methods have been suggested from time to time—a round piece of leather or condensed piece of wool having an adhesive side next the skin, and a round hole cut out of its centre to receive the corn or bunion, and this then applied round the periphery of the swelling; this, no doubt, is a very useful plan, but act, as it may do, most efficaciously for a time, it is only palliative, and does not effect a permanent cure. The topical application of nitrate of silver produces a hardened, black portion of epidermis over its summit; this, after a time, gets detached, and you can peel it off, and when this is removed touch it again with the nitrate of silver, and so on until all traces of the callosity disappear. I have over and over again tried this plan, and it has seldom failed in my hands, but it must be persisted in. Chiropodists, a class of people who think themselves very clever, profess to take a "corn out by the roots"—a most unscientific observation, to say the least of it—and in reality all they do is, by a patient and gentle paring process, remove a great part of the thickened cuticle, and recommend a well-fitting boot, and simply by removing the cause it often effects a cure. You must also bear in mind that a very loose boot is nearly as bad as a very tight one. Glacial acetic acid is also recommended to be applied after the callosity has been well softened by keeping the feet in warm water for a short time. When the callosity occurs in the sole of the foot and a circumscribed enlargement is seen, if directions are given to a bootmaker, he can make an allowance in the sole and form a slight depression, so as to prevent undue pressure to the foot; in fact, boots of any dimensions and shape can be made by an intelligent bootmaker to suit any deformity occurring in the toes or feet. Well-made boots prevent much annoyance and deformity, while badly-made and ill-adapted boots are a very frequent cause of deformity, corns, bunions, limping, &c. Another distortion often seen is what is called *Hammer-Toe;* it is caused generally by wearing boots of insufficient length, and the toes are bent up and considerably flexed to accommodate themselves to their cramped position; after a time the flexor tendons become permanently contracted, and the toes assume a form not unlike the appearance of a hammer—hence the name; the great, second, and last toes are most often affected.

Treatment.—To recommend longer boots, and allow the toes space to travel forwards. Tenotomy of the contracted flexor tendons may be resorted to, and a spring-pad attached to a sole of leather or other light material, and the toes bent forcibly down and bandaged to this sole, which may have slits in it corresponding to the interdigital spaces, which facilitate the bandage passing between the toes and keep them permanently extended.

Gouty and rheumatic enlargements of the toes are very often seen in persons affected with these diseases. It frequently produces considerable and unsightly deformity at the joints of the toes, most painful at times, and when the patient has this gouty diathesis an attack comes on suddenly, termed a "fit of the gout," and often affecting the feet—hence the old name given to the disease—podagra, meaning a seizure of the feet. These concretions have a chalky-like appearance, are termed tophi, occasionally called, although improperly, "chalk-stones," and are principally composed of urate of soda.

These enlargements may remain inactive for a long period, or may become inflamed and ulcerate and expose these calcareous concretions, which often crumble away in a thin puriform discharge. The joint they are deposited round is completely destroyed by gradual structural change, and all motion is lost, and even in a very slight deposit stiffness of the joint is nearly always the result. As it is apparent that such concretions are merely the effect of a constitutional or blood disease, your treatment should be directed to the disease itself, and to endeavour if possible to correct the poison, whatever it may be, whether uric or lactic acid, by proper remedies, and prevent the attacks by remedies so highly vaunted in the rheumatic and gouty diathesis, such as some of the preparations of potash, lithia, colchicum, guaiacum, &c.—*Medical Press and Circular, April* 21, 1874, *p.* 331.

83.—ON THE TREATMENT OF EXOPHTHALMIC GOITRE WITH BELLADONNA.

By Dr. R. T. Smith, Physician to the St. Pancras Dispensary.

[Cases of exophthalmic goitre are most distressing, both from their nature and the difficulty in relieving them. The protruding eyeballs, the wild anxiety of countenance, and the over-action of the heart, form a tableau once seen not readily forgotten. The disease was first clearly described by Graves, of Dublin. We omit the first part of the first case described by Dr. Smith, including the remedies which failed, and pass on to that which succeeded.]

In July, five months after first seeing her, I saw her again, and found her worse than ever. Pulse 140; anæmia most profound; the eyeballs appearing as if they would burst from their sockets. She was now confined to bed by extreme weakness, and by the painful palpitation which occurred on the slightest exertion; but the symptom most complained of was the burning heat which came over her from time to time, and terminated in a drenching perspiration, leaving her in a most exhausted condition.

Aconite was next given in doses of one minim every hour, but was withdrawn after two days' use, as it seemed to give no relief. I was now induced to try belladonna, as a mere experiment, on two grounds: first, that the disease is considered by some to be essentially a paralysis of the cervical sympathetic; secondly, the statements of Dr. John Harley and Dr. Meryon, that belladonna is a stimulant of the sympathetic. Five minims of the tincture were given every hour. Compared with previous treatment the effect was surprising. In two days the pulse was 90, the palpitation very materially relieved, and the outbursts of perspiration very much subdued. In four days the pulse was 80, and on the fifth day the patient walked from King's Cross to Paddington and back again. For ten days no other drug was given, and it had once to be suspended owing to an intercurrent attack of diarrhœa. The dose was then reduced to fifteen minims four times a day; subsequently iron was added.

The relief of the palpitation, of the quick, throbbing pulse, and of the profuse perspiring was, so to speak, immediate. The patient was restored to comfort and ease in a fortnight. Amelioration in other respects was gradual, and is still progressing. The diplopia was removed in six weeks. It was quite two months before decided improvement in the exophthalmos could be reported.

Now (May, 1874), no sclerotic is seen above the cornea when the eye is wide open; the enlargement of the thyroid is nearly gone, and the patient is now in a very fair condition of health and strength.

Case 2.—Miss H., aged twenty-six, came under my care in May, 1873. For several months she had noticed that the neck had been enlarging on the right side, this condition being accompanied with beating in the neck, palpitation of the heart, and great exhaustion. She was very restless and fidgety, and refused to see her friends on account of the scarlet suffusion of the face which came over her on the slightest excitement, together with the beating in the neck and the palpitation of the heart. There was slight anæmia, but no amenorrhœa.

Pulse 180. The thyroid gland was greatly enlarged on the right side, and pulsated, with a marked systolic thrill. In this instance there was no exophthalmos, but the eyelids were swollen, lachrymation was often profuse, and the patient complained very much of a feeling of grittiness in the eyes. There was no conjunctivitis. Having known the patient previously, one could not help noticing the change in the facial expression. The face was pinched, the alæ nasi depressed, the features had become quite coarse, and the skin had assumed a brown, dull, unwashed appearance. There was no cough, no pyrexia, and, as in the other case, no dyspnœa. Constipation was a most troublesome and obstinate symptom. She suffered very severely from attacks of "flushings," which occurred most frequently at night, and on account of which she would have the windows thrown open. These "beats" were accompanied by violent palpitation of the heart, and terminated in profuse perspiration, and often in great prostration.

Treatment.—For three months various remedies were tried, in the following order: iron; digitalis; valerianate of zinc; ice to the neck; aconite; iodine internally; and the constant current: with very little if any relief. In July I began the use of belladonna, giving five minims of the tincture every hour. The effect in relieving the palpitation, reducing the frequency of the pulse, and in subduing the "flushings" and perspirations, was quite as manifest as before; but meanwhile other symptoms had appeared—namely, severe headache, occasionally followed and relieved by copious epistaxis, and attacks of angina, which were on two or three occasions so severe as to require the administration of chloroform. Belladonna alone quickly relieved all these symptoms, and in a month's time she might fairly be considered cured. The muddiness of the complexion was gone, and her natural expression was restored; the pulse was 70, and the palpitation removed. But the thyroid gland has undergone little reduction, and has become firm and hard by a fibroid change.

It is a rather interesting fact that in both patients there was a considerable development of fat after the relief given by belladonna. In both cases there have been some recurrences of the symptoms, but they have speedily given way on resuming the treatment. The drug was not given during sleep, and it is noteworthy that reduced doses sufficed as the treatment was continued. Harley states that moderate doses cause contraction, large doses dilatation of the arteries; and it is therefore of great importance that the varying susceptibility of individuals in reference to this drug be kept in mind.

But as there are cases of palpitation quite unassociated with exophthalmos and enlargement of the thyroid, which are greatly benefited by belladonna, it is possible that in the above two cases the relief given was primarily through the heart, the drug acting sedatively thereon.—*Lancet, June* 27, 1874, *p.* 902.

84.—THE TREATMENT OF VARICOSE ULCER BY LOCAL DEPLETION.

By **Charles W. Hamilton**, Esq., Medical Officer of Louisburgh Dispensary District.

Mr. D., æt. 50, a Scotch steward, of healthy appearance, consulted me about his leg in December last (a lady of rank in this country having recommended him to place himself under my care). The history of the case was as follows: The entire leg was in an exceedingly varicosed condition, varicose pouches occupying the entire anterior surface of leg and thigh; an ulcer the size of a shilling was on the skin, the centre of which touched the anterior part of the tibia. When I saw him the entire leg was exceedingly inflamed, with a deep-seated and severe pain about the seat of ulcer; the latter was of an indolent type, with a hard edge and excavated centre, touching the bone, the latter symptoms being referrible to his active habits of life. The ulcer he had had for a period of nine or ten years, and during all that period it never had healed. He was treated in the usual way—viz., the sulphate of magnesia in mixture, with rest, which soon removed the painful symptoms, and the use of the bandage soon reduced the limb to its normal size. The treatment was now directed to the broken surface, the hard edge of which was removed in due time by lunar caustic, and the parts about the ulcer were daily strapped, after Banyton's method. He had been now five weeks under treatment; the ulcer had got smaller and the edge had disappeared; still, it showed no sign of healing. The sixth week of treatment showed the surface of ulcer still obstinate to cure (every precaution with regard to tonics, bowels, bandaging, &c., being strictly observed). The patient now considered himself incurable, and with some trouble was persuaded to lay up for a short time longer. The prospect of failing, after so long a course of treatment, was anything but pleasant. I now clearly perceived something must be retarding the progress of the cure. A considerable amount of redness remained around ulcer, the capillaries being in a state of chronic congestion. With the view of relieving this congestion I removed with a lancet not more than a drachm of blood, dressing it with carbolic oil, and strapping. On my next visit, which was in two days following, I found the appearance of the ulcer very much improved, and showing every symptom of healing; accordingly, I repeated the operation, and on my next visit, when I removed the strapping, *no ulcer could be seen.* I now procured from Messrs. Fannin a legging and knee-cap, which he constantly wears, and is now quite well, and his leg gives him no trouble.

Thus, by the "*local*" abstraction of a few drops of blood was this old ulcer, so obstinate to any other kind of treatment, cured.

The above case, I think, shows the advantage of *local depletion*, which may be applied with benefit about any broken surface where chronic congestion of capillaries appears.—*Medical Press and Circular, April* 29, 1874, *p.* 852.

85.—ON THE DIAGNOSIS AND TREATMENT OF PSORIASIS.

By Dr. Dyce Duckworth, Assistant-Physician to St. Bartholomew's Hospital.

The ordinary form of psoriasis is usually seen in persons who are robust, and it is very common to find that the disorder has recurred several times. It is seldom met with in children under six years of age. The sexes appear to be about equally liable.

It is not often that one can elicit a distinct history of gout in cases of psoriasis; but, as an indication of a tendency to such a diathesis or of some condition allied to it, it is frequently the case that lithiasis occurs in these patients. I am inclined to believe that a form of eczema rather than psoriasis is the cutaneous manifestation of a gouty habit, and its characters are the following:—The patches may be variously situated, not unfrequently being found upon the face and lower extremities; they tend to assume a dry condition without much scaliness; they are intolerably itchy and stinging, and in colour they are dark crimson. One peculiarity is that they are apt to recur upon the same locality; another is especially noteworthy—that while they are not amenable to arsenical medication, they sometimes speedily yield to so-called antiarthritic remedies, such as alkalies and salines. Such dry eczematous patches should hardly be confounded with the paler, more scaly and diffused ones of true psoriasis. There can, however, be no doubt that in some persons attacks of psoriasis alternate with those of articular gout.

In the majority of cases we have to confess our ignorance as to the underlying condition of which this disfiguring affection is significant. Some writers maintain that it is in some way related to latent syphilitic taint. This view is not, however, borne out by the results of treatment. Again, the alleged frequency of the disorder amongst the Jews has led some to conceive that this squamous disorder is a relic of leprosy. This view cannot be held to be proven in any way. It is in some respects satisfactory to know that vigorous and healthy persons are most commonly the sufferers. The disease certainly runs in some families, and hereditary tendency to it exists.

Treatment.—In such cases as are manifestly due to syphilis there is no difficulty in applying proper remedies. Small doses of perchloride of mercury, with or without iodide of potassium, are most useful. Sometimes iodide of potassium alone is sufficient to remove the disease, and the doses must be gradually increased according to the effect produced. Locally there is much to be secured by the employment of such mercurial preparations as irritate least, and the best of these are the five per cent. solution of oleate, or a fifteen grain to the ounce solution of bycyanide of mercury. Calomel or vermilion fumigations are also of marked service, two or three of these usually proving sufficient. Salivation does not follow this practice, unless the patient inhales the vapour of the volatilised salt.

Recurrence of the disorder is apt to follow if the remedies be too soon withheld, and in every case the patient should remain under occasional observation for two or three years. Attention to the general health is of much importance, regular habits and strict temperance being especially enjoined.

In the management of true psoriasis there is scope for much discrimination. As in all cases of disease, the patient, and not his malady, should be treated. In most instances there is much to be done locally. I am convinced that the favourite dictum of Professor Hughes Bennett, of Edinburgh, with regard to this disorder, has much truth in it. He used to teach that pitch externally, and arsenic given internally, would cure any case of psoriasis in six weeks, and I have frequently witnessed the good results of this treatment in his hospital practice. It must, however, be stated that during this period the patient either kept to his bed or lived in clothes constantly smeared with pitch ointment, and I have little doubt that much of the success of the plan depends upon the *constant* application of the local remedy. Hence this method is only suitable, as a rule, for hospital patients. Frequent baths also formed part of the Edinburgh treatment. The arsenic was given in the form of Fowler's solution together with half-drachm doses of liquor potassæ.

It must be admitted that this plan of medication is not so universally applicable as the above-quoted dictum might lead one to believe. Many cases of psoriasis are intolerant of the action of pitch. In certain persons, and in particular stages of the disorder, the remedy proves too irritant; and, again, arsenic, even in the smallest doses, cannot be borne by some patients. Hence, in many instances, the employment of pitch has to be carried out in a modified form. I have a high opinion of the value of the application in the majority of cases. If pitch ointment is objected to, some of the tarry oils, or carbolic acid, may be substituted; and the odour may in some degree be covered, as Dr. McCall Anderson has shown, by the oil of lemon-grass (citronella) or by rosemary. The tarry preparations, and all local remedies indeed, should only be applied to the affected spots, and with as diligent friction as can be borne. The linimentum picis comp. is a favourite application at St. Bartholomew's Hospital; and is composed of equal parts of pitch, soft soap, and rectified spirit of wine. It is best laid on with a painter's brush, or with a piece of flannel.

Warm alkaline baths are of much use, not less frequently than twice in a week; and, if the patches will bear it, they may be effectually cleansed and prepared for fresh inunction by friction with soft soap and pumice-stone.

It will be found, however, in many cases, that this local treatment is resented, and this is to be looked for in the early stages of the disorder, when the patches are small and hyperæmic, and when fresh spots are still appearing. Irritant treatment is inapplicable to this condition, and, instead, it is proper to employ simple inunction with olive oil, almond oil, or spermaceti ointment. Warm rain-water baths and a lather of warm gruel or decoction of starch are also preferable to alkaline baths.

Later on, good Castile or petroleum soaps may be used to cleanse the patches and get rid of scales. If cracks appear in the lines of motion, and the affected parts become very sore and sensitive, water-dressing is of much service in allaying the discomfort, and it may be practised after anointing with bland oils. A creamy paste of oxide of zinc with a little glycerine-and-water or lime-water may also be used with benefit. The cracks may be treated at night with the glycerine of starch. In the later stages of most cases the tarry applications may be employed. If it were possible to secure a constant contact of pitch, the results would, I believe, be more satisfactory than they usually are. It often happens that patients consent to use this application only at night, and hence a longer time is required to remove the disease.

In the Dublin schools the use of calomel ointment is common. I have tried this preparation in a number of cases, but I think it is less efficacious than pitch. Salivation never follows the external employment of calomel. Nitrate-of-mercury ointment is a more powerful application, and sometimes proves very useful. The oleate of mercury is, however, preferable in many respects. I have known beneficial results to follow the use of two or three calomel fumigations (fifteen grains at a time), even in cases where there was no reason to suspect any syphilitic taint.

Few remedies exceed in value the employment of lemon-juice locally in obstinate cases of palmar psoriasis. The part should be rubbed with a piece of freshly-cut lemon several times a day. It is often difficult to prove the exact nature of chronic palmar psoriasis. Many cases are doubtless of syphilitic nature, but many are quite uninfluenced by anti-syphilitic treatment. Lemon-juice may be tried in all chronic and unyielding cases.

In most cases of chronic psoriasis it becomes necessary, and it is often desirable, to change the local plan of treatment. Thus, mercurial preparations may be used alternately with those of tar. Any remedy that is manifestly beneficial should be steadily persevered with till the disease disappears. Constitutional treatment should be continued for some time after the removal of the patches, and I now pass on to discuss the best methods of internal medication.

There appears to be much unanimity amongst writers upon skin diseases as to the value of arsenical and alkaline remedies in cases of psoriasis. It may, I think, be safely affirmed that the majority of cases are benefited by arsenic. It is certainly more useful when the acute stage has passed away, and when the patches have become very scaly. If it can be borne at all, it can generally be taken in considerable doses. It is best given in the form of Fowler's solution with liquor potassæ or bicarbonate of soda in any suitable infusion. Sometimes it is better borne in the form of the Asiatic pill (with black pepper). From three to six minims of the liquor arsenicalis may be given three times a day, and each week the dose may be increased by a minim or two. Mr. Hutchinson's plan of withholding the medicine altogether for a day in each week is, I think, worth following during an arsenical course. I do not lay much stress upon the exhibition of the drug immediately after food, having observed, as many practitioners must have done, that, if arsenic is borne well, it can be taken almost at any time. As there are exceptional cases, however, it is perhaps a safe rule to enjoin upon most patients, and by some persons arsenic can only be taken after food. The dose may be carried to the extent of ten or fifteen minims if need be, and the larger quantities will often accomplish results which are quite unattainable by the smaller. I believe many cases of psoriasis are allowed to linger on unbenefited because arsenical medication is not sufficiently and boldly pushed. If there is clearly an intolerance of the remedy, it is proper to prescribe simple alkalies, and an effort may be made to act more freely upon the kidneys. Thus, nitrate of potash, acetate of potash, and nitrous ether may be given. Pitch, in the form of capsules, to the number of three or six in the day, each containing five minims, may be tried; likewise carbonic acid, in doses of one or two minims, in the form of pill. With these latter remedies may be classed the balsam or resin of copaiba, and the tincture of cantharides, which are held in repute for the treatment of psoriasis. It is not unlikely that these medicines act beneficially by stimulating the action of the kidneys, and thus relieving the skin.

If there is manifestly a gouty predisposition, it is important to employ alkaline remedies, and colchicum may be given with these; and in these cases it is necessary to employ mercurial purgatives occasionally, and to promote more free and watery evacuations from the liver and bowels by means of sulphates of magnesia and soda or by the action of Rochelle salts.

In most cases of psoriasis, but especially if there is gouty taint, care must be exercised as to proper diet and regiminal habits. Rich and fatty food, highly seasoned dishes, and undue amount of animal food must be avoided, likewise cheese, pastry, wines, and malt liquors. A plain diet consisting of fish, fowl, and roast meat, with abundant green food—cruciferous mainly—and free use of water-drinking, is best. Light claret or well-diluted alcohol may be permitted to that large class of patients who will not be persuaded to abstain, even temporarily, from the use of all liquors.

Resort to some of the spas thus becomes a valuable adjunct to most therapeutical measures in the treatment of psoriasis. The discipline enforced, the facility for bathing and water-drinking, and the avoidance of improper dietetic habits, are all of value to such patients. I believe the sulphurous waters of Harrogate are amongst the best in this country for sufferers from psoriasis. No benefit can, however, be looked for in chronic cases unless a prolonged course of treatment is carried out. It is well worth while for any patient severely affected to try the effects of three or four months of suitable hydropathic treatment.

On the continent the baths of Aix-la-Chapelle, Schlangenbad, and of Leuk, are amongst the best. In the more recent cases the latter are indicated rather than the former. The most suitable waters for drinking are those of Vals, Carlsbad, Friedrichshall, and Püllna.

It will be observed in some cases that the patches commence to clear up from the centre, and a raised marginate eruption remains. The latter must be vigorously treated, and the healing centres may be less carefully attended to. The explanation of the occurrence is probably to be found in the fact that the parts first attacked tend to recover first, while those which are affected later—the extending areas—are the last to be restored to health. Cases met with in this healing stage, constituting one of the annular or *lepra* varieties of the disorder, must be carefully distinguished from gyrate patches of syphilitic squamous affection. In such chronic cases as are termed *inveterate* I should counsel prolonged hydropathic treatment, with careful attention to the weight and general nutrition of the patient.—*Lancet*, *July* 4, 1874, *p.* 7.

86.—A METHOD OF TREATING TINEA TONSURANS.

By Edgar A. Browne, Esq., Surgeon to the Eye and Ear Infirmary, and the Dispensary for Skin Diseases, Liverpool.

[We should never have a parasitic disease if the soil on which it grows were not a suitable one. Theoretically therefore we should attain the most complete success by improving the constitutional vigour of the patient, but in actual practice we are frequently obliged to content ourselves with an imperfect fulfilment of this condition.]

Parasiticides are generally applied in the form of lotions, dabbed vigorously into the patches, and kept in contact by soaked pads of lint covered with oiled silk, &c. The objections to the plan are, the frequency with which the application must be renewed, annoying both to patient and attendant, the difficulty (or say, impossibility) of making nurses understand the importance of maintaining a constant and not an intermittent atmosphere over the part, and the trouble of keeping the pads in position, on dependent portions of the scalp such as the occipital region.

In a certain number of cases where one or other of these drawbacks becomes prominent, the following plan will be found useful. A margin of healthy hair is to be cut quite short or shaved round the patch. A brisk rubbing with the ol. picis rect. or some similar hydrocarbon is the next stage, and the reddened and saturated patch is to be thickly dusted with a powder composed of tannin, odine, and gum arabic. This is to be moistened with a few drops of the oil, and gently but firmly pressed into the skin with the end of a small cork. Repeat the process till the whole patch is covered with a layer of paste about an eighth of an inch thick, and then allow it to dry. The firm hard scab thus formed may be left undisturbed for three or four days, when it should be moistened, scraped off, and reapplied. No home dressing is required in the intervals.

This mode of treatment is not easily applied to patches of more than about an inch in diameter, as the artificial scab is apt to crack and fall off in pieces, nor is it at first received with much favour by parents of the upper classes on account of its somewhat suggestive appearance. Simple as it is, parents and nurses can seldom be trusted to make the application,—the surgeon should act as dresser.

The advantages of the method are the long interval between the applications contrasted with what can be had with any evaporable dressing in common use; the absence of irritation; the prevention of auto-inoculation by combing, &c., owing to the solid roof formed over the fungus; and the avoidance of bandages, pads, impervious night-caps, or other easily disarranged contrivances.

It is at least as rapidly effectual as any other plan with which I am acquainted.—*Practitioner, May* 1874, *p.* 327.

87.—CASES OF MALIGNANT ONYCHIA TREATED WITH NITRATE OF LEAD.

Under the care of FAIRLIE CLARKE, Esq., at the Charing Cross Hospital.

Three cases of onychia maligna have lately presented themselves at the above hospital, which have all been treated with nitrate of lead, according to the suggestion of Mr. MacCormac.

The first patient was a traveller, aged forty-one, who had malignant onychia of the right little toe. The disease was of ten or eleven weeks' standing. The toe was much enlarged and clubbed, the nail was almost entirely gone, and there was an ulcerated surface the size of a threepenny-piece. There was severe pain, not merely in the seat of the disease but also in the ankle; and as the patient was obliged by his occupation to be constantly on his feet, it was a very serious inconvenience to him. He came to the hospital on Dec. 12th, 1873. The nitrate of lead was dusted on the ulcer, and he was told to apply it in a similar way every night and morning. He abstained from work for a week, and rested at home, so that he gave himself every chance. On the 19th the following note was made:—"The toe is easier than it has been for a long time past. There is now a hard dry scab on the spot which was before raw and ulcerated." The patient continued to attend the hospital for a week or two longer, the onychia meanwhile slowly improving, and then he was lost sight of. After the lapse of four months he was met walking briskly along the street, following his ordinary occupation. He said that the nitrate had "effected a perfect cure." He had used nothing else, except "a lotion of herbs," and he had got speedily well.

The second case was that of a pale, flabby little boy, aged three years and a half, who was brought on Jan. 20th, 1874, with malignant onychia of the right thumb. The disease began a month before he came to the hospital, and took its origin from jamming the thumb in a cab door. The thumb had a very characteristic appearance, being enlarged through its whole extent, and clubbed at the point. The nail was ragged and misshapen, and the ulcerated surface around it bled freely. The patient was ordered steel wine, and nitrate of lead was dusted upon the sore night and morning. It was said at first that the application gave great pain, so that the child screamed violently; and probably it was not applied regularly. Still the ulceration improved. At a subsequent visit the mother said that the application was less painful, and she asserted that it was regularly used. The case was steadily improving during the three or four weeks that he attended, but afterwards the child was attacked by the measles, and did not visit the hospital. The nitrate was, however, beneficial in this case, and would doubtless have effected a cure if it had had a fair chance.

The third case was that of a married woman, aged thirty-seven, who applied at the hospital on Feb. 3rd, 1874. She was suckling at the time, and was rather weak. The malignant onychia had originated in the prick of a hair-pin two months before. When first seen the right thumb was red, swollen, and clubbed. There was a large ragged ulceration; the nail had perished; and the last phalanx was necrosed, and was separating. She was ordered to take quinine mixture, and to apply the nitrate of lead twice a day. It gave her very trifling pain, and seemed to produce an immediate amendment. In a few days the last phalanx came away. As there was a good deal of pain in the thumb, poultices were applied over the nitrate. She went on steadily improving, without a drawback, and in six weeks the disease was cured, the thumb remaining of course somewhat misshapen in consequence of the loss of the last phalanx.

On the whole, having regard to the severity of onychia maligna, and the great difficulty of treating it successfully by the ordinary lotions or ointments, Mr. Fairlie Clarke is inclined to think that the remedy to which Mr. MacCormac has drawn attention is a very valuable one.—*Lancet, May* 23, 1874, *p.* 726.

88.—ON THE DISPERSION OF TUMOURS BY PUNCTURE.

By Deputy Inspector-General Cameron, H.P.

Those familiar with the East are aware that, from time immemorial, the native hakims have been accustomed to attempt to bring about the absorption of the enlargements of liver and spleen, so common in hot malarious countries, by the use of puncture with long, sharp stilets of considerable thickness. Twining, in his work "On the Diseases of Bengal," mentions the practice.

I have never followed it for the purpose of procuring the dispersion of such enlargements, but I have frequently seen those of the liver disappear rapidly after repeated plunges of an ordinary hydrocele trocar when seeking unsuccessfully for suspected abscess; and I may say here that I never saw in any instance inflammatory or any other bad symptoms produced by such operations, strange as it may appear to those unaccustomed to perform them. But what I wish to draw attention to is, that other enlargements besides those of liver and spleen may be made to disappear by puncture. Nothing is more tedious than those chronic glandular swellings which, in strumous subjects, often in hot countries follow upon trifling causes, such as angry mosquito bites, riding a rough bucking horse, over-exertion, or a strain in cricketing and so forth. I have seen an officer laid up for many months, and ultimately invalided with a large mass of indurated enlarged glands occupying the whole inguinal region, and resisting all the recognised routine of treatment. Accident showed me that deep puncture of such masses with a common lancet held at right angles to the swelling, and pushed down to its bottom, will often cause absorption to set in and proceed rapidly. The first case in which this occurred to me was one of a mercantile gentleman, disabled by a mass of swollen inguinal glands, hard as a board almost, and resisting all treatment. This patient's loss of time at office was a very serious matter to him, and, influenced by his despairing impatience, I plunged a lancet perpendicularly into the mass as far as it would reach. The point came out tinged with matter, and hard pressure brought up a little cheesy, ill-formed pus, but no discharge whatever followed, and absorption set in and proceeded rapidly.

An extraordinary and suggestive case occurred to me afterwards, which, in my opinion, affords grounds for thinking that puncture might possibly be found to bring about the dispersion of such growths as fibrous tumours of the uterus. Reasoning from the non-supervention of any evil symptoms after repeated and deep puncture of the liver, even with such a clumsy tool as a small hydrocele trocar, I see no ground for fearing to puncture with a small stilette such a fibrous uterine tumour as is often plainly to be felt through the abdominal parietes, and I think puncture through them less likely to be followed by any evil consequences than puncture per vaginam, owing to the perfect exclusion of air. That an analogous operation of the kind can be done safely and successfully the following remarkable case shows.

When superintending surgeon of the Southern Province in Ceylon, one of my assistants requested my advice respecting an infant of a few months old, whose parents were in a great state of anxiety and alarm about a swelling which they had discovered in its abdomen, and on which the usual constitutional and local treatment produced no effect. A fine healthy infant was brought forward, through whose abdominal walls a firm tumour, about the size and shape of a dove's egg, could be felt with ease. It was smooth, movable to some extent, painless on pressure, and seemed to be situated in front of the upper edge of the quadratus lumborum muscle, as far as one could judge, half way from the spine. I told the parents that nothing operative could be attempted with it, and recommended patient perseverance in the treatment already adopted, assuring them that no change was to be feared if left alone. This did not at all satisfy them; they declared the tumour was steadily increasing, and would ultimately kill the child, imploring me from time to time to save it by an operation. To all this I turned a deaf ear, but they worried the gentleman in charge incessantly, and at last he too begged me to do something with the case, no matter what. On seeing the child again I found that the tumour was certainly increasing, for now it was as big as a full-sized pigeon's egg; still I counselled non-interference, assuring the parents that any operation would in all probability prove fatal. To this they replied that they were quite prepared for such a result, and willing to risk it, as death would certainly follow the steadily increasing enlargement of the tumour, so that really they had all the misery of seeing their only child dying by inches, and nothing done to prevent it! At last, like the importunate widow, they wearied me out, and as in my then position I had not to dread either Mrs. Grundy's remarks or a coroner's inquest, I agreed to "do something," at the same time distinctly stating that inflammation and death would almost certainly be the result of my meddling. Full acquiescence being given, I steadied the tumour between my fingers spread out, and then pushed a lancet, held at right angles, deep into it. The feeling communicated to the hand was that of penetrating a dense glandular structure. No trace of matter appeared on the blade, no diminution of the tumour, nor any sign of internal hemorrhage; so the infant got a suitable opiate and a large poultice over the abdomen, the parents being quite happy at their wishes being granted. It never had the slightest fever or bad symptom of any kind, and, absorption having set in at once, the tumour, whatever it was, disappeared altogether in a very brief space, while I had the praises of my wonderful skill sounded in all directions. With this case and those where a like result followed on puncture of the liver borne in mind, I should be greatly disposed to try a similar treatment sooner than see a patient perish by hemorrhage consequent on fibrous uterine tumour. Those who have never witnessed hepatic explorations are often very slow to believe in their safety and good effects. An old Peninsular P.M.O., new to the East, once saw me push a trocar deep into the liver three times in succession without finding the abscess I was in search of. He stole quietly away, unnoticed, while I was bending over the patient, being fully convinced that death would result. Next morning he met me with a very ominous face, and inquired, "How is your man, sir?" "Oh, very well," I replied. "What, sir! very well! after receiving three deep punctured wounds in his liver?" I advised him to go and see for himself, and great was his surprise on doing so. In that case a perfect recovery took place, the general enlargement wholly disappeared, and the man, a sad drunkard, was soon discharged to duty.

Having, some years ago, been so well abused in the pages of this journal by the Netley Professor of Medicine, for strenuously advocating the early puncture of the liver in every case of suspected abscess, it is with peculiar pleasure that I have read in the Medical Gazette of 25th April last, p. 457, the brilliant success of the operation at the Madras General Hospital, in a case where two distinct abscesses—one containing four and the other *forty* ounces of pus—were opened in succession in the same patient, instead of leaving him to die of hectic while waiting for "pointing" to take place, as insisted upon by my severe critic. How many lives have I seen sacrificed to such timid practice! My long experience in such cases leaves no doubt on my mind that where hepatic abscess is suspected to exist, not a day should be lost before endeavouring to evacuate it. If this is done while the abscess is still small, and also deep-seated, I am inclined to think that nothing beyond the first emptying of it will be required, and that the canula may safely be withdrawn and the opening closed at once. The last hepatic abscess I opened showed no external indications whatever of its existence. The man had never had any acute symptoms, but was steadily declining in health without any specific tangible cause, so that I was requested to see him in consultation, and diagnosed deep-seated abscess, more by the method of elimination than anything else, save the sort of intuitive conviction which long experience often causes one to feel without being able to say specifically why. I felt certain he had a deep abscess somewhere in his liver, and made two deep unsuccessful explorations for it with an ordinary trocar. Fancying I had not gone deep enough, I took a long rectum trocar, and with that hit the spot, and evacuated about two ounces of thick matter. The usual plan of fastening in the canula was adopted, but it slipped out in the night, and could not be reintroduced in consequence of the resistance and struggles of the man. I expected effusion into the peritoneum and death would result, but to my surprise the man rapidly recovered without the slightest bad symptom, and without any further discharge whatever, thereby considerably enlarging my ideas on the treatment of his formidable ailment; but, unfortunately, I never had another case of it during my subsequent year's service in India on which to try the improved plan of management with which accident had made me acquainted.—*Lancet, Aug.* 22, 1874, *p.* 267.

SYPHILITIC DISEASES.

89.—THE SUBCUTANEOUS INJECTION OF MERCURY.

By CHARLES J. CULLINGWORTH, Esq., Surgeon to St. Mary's Hospital, Manchester.

It was not without reason that Sir William Jenner, in his Address on Medicine at the meeting of the British Medical Association in 1869, spoke of the introduction of subcutaneous injection into medicine as one of the most important advances of recent times. As with every other valuable invention so with this, it was not the result of a sudden brilliant inspiration, but the crowning point of much careful research and patient experiment. Here, as usual, coarser methods led the way, and step by step these were modified and improved; the object of almost all the early investigators being the relief of neuralgia by the direct application of narcotics to the painful part. First of all, in 1824, it was suggested by Lembert and Lesieur to raise a small blister over the painful spot and sprinkle powdered morphia on the denuded surface. Then, in 1836, Lafargue, by means of a lancet puncture, inoculated morphia in its solid form, or made into a paste with water. A little later, morphia in suspension was introduced by means of a grooved needle, or on the point of a lancet, or as was practised by Langenbeck, in a sort of miniature scoop or spoon, partially covered over. This was again improved upon by Rynd of Dublin, who devised an instrument consisting of a needle and canula, the needle being withdrawn by a spring after making the puncture, and a concentrated solution of morphia poured into a little opening in the side of the canula and allowed to run down into the tissues. To Dr. Alexander Wood, however, belongs the credit of having raised the new method into popularity by the adaptation of his subcutaneous syringe. He tells us that he had tried first one and then another plan of conveying morphia under the skin, and had found them all unsatisfactory, until, at the end of the year 1853, he had occasion to use one of the little syringes made by Ferguson for injecting solution of the perchloride of iron into a nævus. It struck him that this was the instrument wanted, and he determined to try it in the next case of neuralgia that presented itself. The opportunity soon came, and all the world knows the excellence of the result.

Still it was considered absolutely necessary, in order to produce the desired effect, that the remedy should be injected at the seat of pain, until Charles Hunter published a series of careful experiments and proved this important fact—that the influence of remedies injected subcutaneously is not local, but is exercised throughout the general system, and that, consequently, the relief will be the same however far away from the afflicted nerve the narcotic be introduced. After much controversy and inquiry the conclusions of Hunter were admitted to be sound; and thus the field of experimentation was greatly widened. The subcutaneous method, until now reserved for the administration of anodynes, was evidently capable of more varied use. Wherever, in fact, precise and rapid action of a remedy was required, this was presently seen to be the best way of securing it. And now we are familiar enough with the injection of quinine in [intermittent fevers, ergot in hemorrhage, Calabar bean in tetanus, certain antidotes in cases of poisoning, and a host of other medicines, which are designed to act quickly and powerfully through the system at large.

It is with the introduction of mercury into the system by this method that I am now going to deal more particularly. Widely different opinions have been expressed as to the value and even the practicability of giving mercury in this way. It will not be amiss, therefore, to commence with a sketch of the history of this mode of treatment.

The earliest experiment appears to have been made by Chas. Hunter himself, who administered to a girl of twenty-one, two injections weekly of a solution of the bichloride of mercury, containing a grain to the drachm, and continued them weekly until twenty-five grains had been given, without producing salivation. The example thus set was followed in the year 1860 by Professor Hebra, and by Neumann, at Hebra's suggestion, in some cases of syphilitic skin disease. They obtained rapid amelioration of symptoms; but, not considering the method preferable to others they soon abandoned it.

In 1864 Dr. Scarenzio, of Pavia, published a memoir entitled "First attempts at the Treatment of Constitutional Syphilis by Subcutaneous Injections." He selected for use calomel prepared in the form of vapour suspended, in his first experiments, in glycerine, and afterwards, in order to expediate absorption, in water alone. He injected twenty centigrammes (three grains) each time in a gramme and a half (twenty-three drops) of the vehicle. For the absorption of the insoluble salt he relied upon the alkaline chlorides of the blood changing it into the soluble bichloride; "for it is certain," he says, "that no physician would risk the injection of a solution of sublimate into the subcutaneous cellular tissue, in the fear of provoking a slough without any chance of absorption." Details are given of eight cases, and in one only was there profuse salivation without benefit. "In all the others there was," he assures us, "a rapid and lasting cure, without accident, either at the time or subsequently." True, every injection that he made was followed by abscess; but he does not rank this as an accident, "for these abscesses were always limited," he says, "to the subcutaneous cellular tissue, and were very quickly cured."

Further trials of this mode of treatment were made by Ricordi, Ambrosoli, and others, at the Hospital for Venereal Diseases at Milan, and in other parts of Italy, where, indeed, it found great favour, and appears to be still in vogue. At a medical congress held at Brussels in 1868 the gold medal was awarded to Drs. Scarenzio and Ricordi for a memoir in which the calomel plan is recommended very strongly, especially in the syphilis of infants and pregnant women; and on the 4th of January, 1869, Dr. Oscar Max-Van Mons narrated to the Royal Society of Medical and Natural Sciences of Brussels several cases in which he also had used calomel suspended in a few drops of thin mucilage. An abscess the size of an egg invariably followed. "One injection," he says, "often sufficed for a cure; if not, a second was made . . . one or two days after the opening of the first abscess; . . . . a third is rarely necessary." This brilliant and astounding result, however, was not allowed to go long unchallenged. Dr. Aimé Martin forthwith published a letter in the Gazette des Hôpitaux, pointing out that it was unreasonable to pronounce cured on the 27th of February cases which had only commenced treatment in November of the previous year. He also condemns the use of calomel on account of its insolubility and the consequent "torture of these abscesses which seem so trifling to M. Van Mons."

On reading an account of Scarenzio's experiments, Mr. Berkeley Hill was led to publish some which he himself had made in 1864–5. He chose for his purpose a solution of corrosive sublimate, on account of its being more readily estimated, and generally injected one-fifth or one-sixth of a grain, in six minims of water, twice a day into the arm or shoulder. His observations extended over a series of eleven cases of constitutional syphilis; in none of which had he abscess, and in only one cellular inflammation, with some little pustules on the skin. The pain of injection was trifling. In nine of the cases the gums were affected after injecting less than one grain and a half of the salt, and in four of these after only four-fifths of a grain.

But by far the most extensive series of experiments yet attempted was that by Dr. George Lewin, of the Charité Hospital, Berlin, who published some observations based on 700 cases—firstly, in the fourteenth volume of the Annals of the hospital, and afterwards as a separate work. He used a simple solution of the bichloride in water (about four grains to the ounce), adding a little glycerine and morphia in the case of patients with a sensitive skin. Fifteen drops (one-eighth of a grain, were usually injected daily, sometimes in the side of the chest, and sometimes below the shoulder-blade, or on the outer side of the arm. It was exceedingly seldom (only in 2 or 3 per cent. of the cases) that he had to contend with local accidents of any importance—as, for instance, abscesses or sloughing of the overlying skin, and even then he attributes them to the clumsiness of the operator. Fifteen or sixteen injections, involving a total quantity of about two grains of sublimate, were generally sufficient to cause the symptoms to disappear; and he affirms that the relapses were considerably fewer than after ordinary mercurial treatment. His book concludes with a short statement of the advantages of the method:—1. Rapidity of cure (proportional to the quantity injected daily). 2. Comparative infrequency and lessened gravity of a relapse. 3. Precision as to dose. 4. Facility of administration. 5. Freedom from irritation of the alimentary canal.

After the appearance of Lewin's paper, several inaugural dissertations were published in Germany on this subject, each of them containing a few original observations, and generally maintaining the superiority of the new treatment. Dr. Grünfeld also related fifty cases treated in the wards of Prof. Sigmund of Vienna. In 1405 injections there were only two abscesses. The duration of treatment was much more prolonged than that indicated by Lewin, being, on an average, 93·7 days—a difference which the author ascribes to the greater severity of the cases. He made some analyses of the urine, and detected the presence of mercury after the injection of twelve milligrammes (about one-sixth of a grain). "No method," he says, "is comparable to this in rapidity and in certainty, or lessens so materially the chances of relapse." He thinks, however, that, owing to the severe pain occasioned by the injection and the liability to abscess, it is chiefly indicated where internal treatment and the use of friction are inapplicable.

Dr. Stöhr, commenting on eighty cases he had observed in the clinical wards at Würzburg, pronounces the subcutaneous treatment to be "the most energetic and direct" mode of mercurial treatment which has yet been proposed. But he, also, characterises the pain of the operation as very severe; and he describes, moreover, a number of very unpleasant constitutional effects—as, for instance, diarrhœa, vomiting, dyspnœa, shivering, feverishness, and even syncope.

The method advocated by Lewin has been adopted by many other observers.

I may mention particularly Dr. T. J. Walker, of Peterborough, who published in the year 1869 an account of ten cases; Dr. R. W. Taylor, of New York, who conducted observations on about fifty patients for a period of eighteen months; Dr. McCall Anderson, of Glasgow; Dr. Oppert, of London, who used a solution of double strength, and related to the Clinical Society of London eight cases so treated; Prof. Sigmund, of Vienna, who writes in 1872 that he has applied it in more than 200 cases, and has met with abscess only five times; Dr. Hammer, of the United States of America; Dr. Hansen, of Revel; and Dr. Hagens, a German army surgeon, who records forty-four cases, twenty-two in the military hospital, and an equal number in private practice. All these observers speak most favourably of the therapeutic results of the treatment. Drs. Taylor and Oppert hesitate to recommend its general adoption on account of the local mischief; while, on the other hand, Hagens says that abscess never occurs except from faulty solution or superficial injection.

At the suggestion of Lewin, M. Liégeois introduced the treatment into France in 1867. He succeeded in avoiding all inflammatory action by using much smaller doses ($\frac{1}{38}$ gr.), and combining with these a small quantity of morphia. On the 2nd of June, 1869, he read a communication before the Surgical Society of Paris, based on researches extending over a period of eighteen months, and including more than 400 observations. He injected fifteen drops in each arm every morning, and found the pain easily tolerated and followed by no inflammatory action. Of 196 cases treated for secondary symptoms, 127 were cured, and the remaining 69 bore no trace of the secondary manifestations for which they were admitted. Six months after cure M. Liégeois was able to say that only four of the cases marked cured had suffered any relapse. He noticed that where the symptoms yielded quickly relapses were more frequent. The average length of time under treatment was from twenty-five to thirty-four days.

[The following is a brief outline of the plan proposed by Dr. Staub, of Strasbourg, in 1872.]

Liégeois had already succeeded in avoiding local accidents by diminishing the dose. The investigations of Staub had for their object the discovery of some form of solution which, while ensuring an equal immunity, would yet permit the employment of ordinary doses, and so lessen the duration of treatment. There are, he says, two principal causes of irritation attending the subcutaneous injection of the sublimate: (1) the known acidity of the solution, and (2) the property it possesses of coagulating the albumen of the tissues. To obviate these inconveniences he proposes to adopt a modification of Mialhe's "normal solution of mercury," which is said to be a solution of the sublimate in that form of combination into which all mercurials enter before they act on the system. It consists in adding to a simple solution of the bichloride in water small quantities of the chlorides of ammonium and sodium and the white of an egg. This solution, Dr. Staub says, is free from acidity, and will not coagulate albumen. It will, therefore, pass directly into the circulation without the formation of a coagulum at the seat of injection; and the delay and irritation due to the process of re-dissolving will be avoided. Forty-four cases of constitutional syphilis are appended, in forty-two of which a cure was effected very rapidly. The average number of injections given to each patient was thirty-four, and the total quantity injected a little under two grains and a half. The pain of the operation he reports to have been trifling, and only occasionally was induration produced. In one patient, the subject of chronic alcoholism, there was some sloughing. Salivation occurred only five times, the gums were affected four times, and there was mild stomatitis three times. The author claims for his solution that it will not give rise to any irritation at the seat of puncture; neither inflammation, nor abscess, nor eschar. Subcutaneous indurations, Dr. Staub says, are very rare, and become absorbed in three or four days. He concludes by expressing his belief that this method is destined to take front rank in the therapeutics of syphilis.

Attracted by the brilliance of Staub's results, I obtained a supply of the solution prepared according to his formula, and proceeded to test its effects for myself. In order to avoid burdening my paper with a mass of details, I have tabulated twenty-three cases in which it was employed. The greater number of the patients concerned, both in this and the subsequent series of experiments, were under the care of Mr. W. A. Patchett, in the Magdalen wards of the Manchester Union Hospital, and a few were in-patients under Dr. Glascott at the Manchester Royal Eye Hospital. I desire to take this opportunity of gratefully acknowledging my indebtedness to both those gentlemen for the readiness with which they granted me every facility for my investigation, and lent me their personal assistance.

The usual dose employed was that recommended by Staub—namely, five milligrammes (one-fourteenth of a grain) of sublimate in a gramme (fifteen drops) of fluid. The injections were generally given every morning, either in the upper arm or in the gluteal region.

Fifteen of the cases were suffering from constitutional syphilis, and all these had some form of syphilitic eruption. In addition to the cutaneous syphilide, two of them had iritis, and one had gummous tumours, as large as an almond, situated in the substance of the back part of the tongue, which had been in a stationary condition for some months. In every instance the rash disappeared very quickly, the average time being eleven days. The cases of iritis were cured, one after seven and the other after eighteen injections, without any symptom of mercurialisation. The tumours of the tongue had entirely disappeared in ten days.

The cases were not under observation for a sufficient length of time to enable me to say anything about the liability to relapse. In two cases, however, fresh manifestations occurred while actually under treatment.

The average quantity of sublimate required to produce slight tenderness of the gums was about half a grain; and in one instance slight salivation was produced after injecting two sevenths of a grain. The pain caused directly by the operation was in every instance inconsiderable. The punctures were *always* followed by a certain amount of induration, which had not become absorbed when the patients left the hospital. In one case that I saw three weeks after the last injection there was still a hard nodule at the seat of each puncture. Once or twice there was a little ecchymosis, but in no case either inflammation, abscess, or slough.

[There is perhaps no better solution for subcutaneous injection than three grains of corrosive sublimate to an ounce of water. Dr. Staub, who has paid a good deal of attention to this subject, uses an albuminous solution]

I conclude, from a series of one hundred injections, that the addition of the white of egg, a distinguishing feature in Staub's solution, is practically useless; while, on the other hand, the presence of small quantities of the alkaline chlorides has the beneficial effect of slightly diminishing the pain of the operation.

I now undertook another series of experiments, upon an equal number of patients, with two solutions marked respectively "D" and "S." The former of these was always injected on the right side, the latter always on the left. Solution "D" contained the double iodide of mercury and sodium, prepared according to the directions of M. Bouilhon. Solution "S" consisted of three grains of the bicyanide of mercury dissolved in water, to which a little glycerine had been added. I am not aware that this salt has been previously used for subcutaneous injection. It occurred to me that it would be less irritating to the tissues than other preparations of mercury. The results in this series were even more satisfactory than in the former. With both solutions the subsequent thickening was either entirely absent or exceedingly trivial, and in this respect there seemed to be scarcely any difference between the two. In the matter of pain, however, the patients were nearly unanimous in giving the preference to the bicyanide, which caused them little or none. With this solution, therefore, the local effects are reduced to absolute insignificance, and I have no hesitation in recommending it for further trial. It is very easily prepared, and is not liable to deteriorate, which are additional advantages.

I have been chiefly anxious in this communication to decide two points; firstly, the practicability of the subcutaneous injection of mercury, which I think my researches have established beyond all doubt; and, secondly, the best form of solution, which, after numerous comparative experiments, I have already indicated.

The larger question of the ultimate value of this mode of treatment cannot be really settled except by observations extending over a series of years. All I shall attempt at present will be simply to enumerate what appear to me to be its special and unquestionable advantages. They are these:—

1. The certainty and rapidity with which the symptoms disappear.
2. The small quantity of mercury necessary.
3. Exactness in the measurement of the dose.
4. Impossibility of disappointment through patients neglecting to take their medicine, &c.
5. Absence of gastric and intestinal irritation.
6. Economy in hospital use.
7. The avoidance of the publicity involved in using baths.
8. The means it affords of rapidly affecting the system in certain grave complications.

I here submit to the profession what I believe to be the first systematic account of the subcutaneous injection of mercury attempted by an English surgeon, and I hope that some of my brethren of greater ability and with a larger field of observation than I can lay claim to will be induced to put this mode of treatment to the proof, and to give us broader data for pronouncing a final judgment on its value.—*Lancet*, *May* 9, 16, 23, *pp.* 653, 686, 725.

90.—ON TERTIARY SYPHILIS.

By S. Messenger Bradley, Esq., Senior Assistant-Surgeon to the Manchester Royal Infirmary.

Tertiary Syphilis is directly Transmissible.—The evidence which I have to bring forward in favour of this proposition is at present insufficient for demonstration, but having some facts which favour this view, I nevertheless state it, because I think its adoption or rejection has an important bearing upon the question of treatment, and upon the right to marry. If it be proved that in tertiary syphilis the poison is still active, and that tertiary syphilis is not a mere sequel of a preceding disease, then it is probable that the remedy or remedies found serviceable in the earlier periods will prove valuable in this its latest stage. The evidence which I have to adduce is the following. Last year I inoculated a rabbit with small portions of a gummatous tumour which was situated in the calf muscles of a man who was at the time under my care. I killed the rabbit three months later, and found that indurations existed at the site of the old inoculations, and that there were similar deposits in the lungs. Of course it may be said that it was tubercle and not syphilis which was produced in this case, and this may be so; but although I am now undertaking a series of experiments to determine this point, this case is the only one at present which I am able to cite as bearing upon the question. There is, however, evidence of another kind, which adds weight to my proposition. Thus, it is generally admitted that parents suffering from tertiary syphilis beget strumous offspring—which is but saying that the syphilitic poison is not sufficiently strong to reproduce itself, but has vitiated the blood sufficiently to determine the production of a strumous stock; and thus struma (rightly, as it seems to me) comes to be looked upon as a sort of bastard syphilis, or, better, as the quaternary form of the disease. Occasionally, however, the children exhibit more direct traces of having inherited the specific poison. I have at present under my care at the infirmary a woman suffering from tertiary syphilis—necrosis of tibiæ, &c.,—who since she has been thus suffering has given birth to a boy. This child is also under my care with interstitial keratitis and osteal and periosteal enlargement of the shafts of both tibæ, which threaten to become necrotic. His condition has improved under the administration of hydrargyrum cum cretâ, though it must be stated that along with this he has taken cod-liver oil and Parrish s chemical food. It seems probable that the reason why tertiary syphilis is generally regarded as not being directly transmissible is due to the fact that the various tertiary lesions rarely furnish any available secretion which can be received through the usual channels. The very situation of the lesions would render it difficult to communicate the disease from one person to another, even if the attempt were made. It is very likely this which constitutes the difference between the inoculability of the secondary and tertiary form of the disease. It will be an interesting point for future observation to determine, in cases where tertiary syphilis is transmitted, say to the rabbit, whether the transmitted disease assume the tertiary type *ab origine*, or whether it ever in the virgin soil travels through the previous stages of the malady.

Mercury is the True Remedy for Tertiary Syphilis.—The formula commonly adopted is that mercury is the remedy for secondary syphilis, particularly for the earlier manifestations, mercury and the iodides for late secondaries, and the iodides alone for tertiary syphilis, mercury being positively baneful. I venture distinctly to dispute the accuracy of this formula, on the ground of practical experience, and to affirm that, except perhaps in cases of extreme bone-mischief, mercury may be so administered as not in any way to impoverish the blood or injure the constitution, but with the sole effect of acting as an antidote to the syphilitic virus. I am pleased to find that I am supported in this opinion by the large experience of Professor Lewin, who, in his work on the treatment of syphilis, gives several cases of tertiary syphilis which were cured by the administration of mercury, and by this alone. I do not for one moment deny or decry the value of the iodides, of sarsaparilla, of cod-liver oil, in our treatment of tertiary syphilis—indeed, I am in the habit of employing all these remedies; and every one has had experience of the almost magical influence of iodide of potassium upon some bone affections,—but my conviction is that by these means relief only from present symptoms is afforded; that they perhaps act by improving the general health, and so mask and help to keep latent the syphilis; that, in a word, they may scotch, but do not kill the snake.

I am constantly in the habit of treating tertiary syphilis—affections of the bones, gummata of the tongue or beneath the skin—with mercury, taking care of course never to salivate, with the result of causing a subsidence of symptoms as quickly as with the iodides, and with a much brighter hope of the symptoms being finally banished, never to reappear, as they are almost sure to do after simply giving iodides. It is of course essential to keep up the health to the best possible pitch during the treatment, and for this purpose sarsaparilla (a pint a day if the patient can afford it) and chlorate of potash are both invaluable; but still mercury is the remedy to which we must trust to *cure* the disease.

The mode of administering the mercury is important. The internal exhibition of the drug is frequently ill borne, but either the mercurial vapour-bath or wearing a mercurial belt answers very well. Of the two, the belt is the most uniformly successful in these cases, as exhausting sweating sometimes follows the use of the bath. Neither inunction nor subcutaneous injection are admissible; indeed, I regard the latter plan from pretty extensive experience as eminently objectionable, being liable, in spite of the favourable testimony of Lewin and others, to produce alarming constitutional symptoms and troublesome local sloughing. I have also found that cases of secondary syphilis, treated with the subcutaneous injection, are (probably from the small quantity of mercury employed and the very rapid *apparent* cure) more prone to relapses than cases treated with mercury on the other plans. This, however, is in itself an interesting and important subject, to which I may, perhaps, have an opportunity of returning on a future occasion.—*Med. Times and Gazette, June* 6, 1874, *p.* 618.

91.—THE TREATMENT OF VENEREAL WARTS AND CONDYLOMATA.

By William Berry, Esq., Workhouse Hospital, Manchester.

The obstinacy to treatment of warts or vegetations of venereal origin situate on or near to the organs of generation is sometimes very great, for in some cases, they will, in spite of active treatment, reappear and spread again and again.

The most persistent of this class of growths are those which are small, have a well-defined and broad base, and are covered with a thin cuticle, and thus resemble very closely enlarged papillæ met with in other parts of the body. These warts will sometimes resist the most active agents, such as strong nitric acid, and even removal with scissors will fail to eradicate them, as they reappear in greater numbers with surprising rapidity.

In two cases under my care lately, the daily application of a strong solution of sulphate of copper, the application of fuming nitric acid every second day, and removal with the scissors failed to effect a cure. The saturated solution of sulphate of copper appeared to stimulate them, and, as the nurse remarked, caused them to grow more rapidly.

In these two cases it was often remarkable to see the reappearance of these growths after the application of strong nitric acid, for no sooner was the yellowish slough removed than they appeared as large as ever; on one occasion the acid was applied after their removal with scissors.

Almost despairing in being able to rid the patients of these pests, I resolved to try the acid nitrate of mercury (liquor acidus hydrargyri nitratis), though with little faith in its efficacy, after having failed with nitric acid.

In both cases (females) the warts grew on the perinæum, around the arms, and on the skin and mucous membrane of the labia majora. I oiled the parts around and applied the acid nitrate of mercury freely, by means of a firm pledget of lint, intending to do so again daily if required. Next morning, however, to my surprise, the warts had become much shrunken and appeared to be covered with a yellowish white slough, the patients complained of feeling very sore, and had been pained since the application. Poultices of linseed meal were now applied, and when the parts were cleaned the warts had almost completely disappeared (a second application removing them), and the skin where they had been was quite healthy.

In some cases, where the warts are one large granulating mass, giving forth an offensive discharge, removal with the *écraseur* will be required; but in those cases where they cover a large surface the application of the acid nitrate of mercury will be found to be the best remedy.

What part the mercury plays in its caustic or escharotic properties I am unable to say, but certain it is that the remedy is superior to strong nitric acid.—*Med. Press and Circular*, *June* 10, 1874, *p.* 487.

92.—CASES ILLUSTRATING THE DIURETIC ACTION OF COPAIBA RESIN.

(Under the care of Dr. Moxon, at Guy's Hospital.)

For the following interesting notes we are indebted to Dr. Ernest Field:—

E. S. F., aged 11½ years, was admitted into the clinical ward on February 18, 1874, suffering from mitral regurgitation. On admission she was extremely ill; there was a large amount of dropsy over the whole of the body, much blueness of the face, and a distinct systolic apex-bruit. Owing to the amount of congestion present, as shown by the condition of the lips and face, a few ounces of blood were removed by venesection; this did not appear, however, to materially relieve the patient. Diffusible stimulants and tincture of digitalis were given at the same time freely, the dose of the latter being gradually increased to twenty minims every four hours. Although at first it was not thought by anyone who saw the girl that she would live twenty-four hours, her condition gradually improved; until, on February 23, there was no bruit to be heard at the apex, the congested appearance of the face had vanished, and the child was cheerful and generally comfortable. The dropsy, however, had not diminished; and at this time only sixteen ounces of urine were being passed in the twenty-four hours. Under these circumstances ten grains of the resin of copaiba were added to the digitalis mixture; in two days the amount in twenty-four hours was thirty ounces, but owing to the sickness produced by the medicine the resin was discontinued. On February 26 the amount of urine passed in the twenty-four hours was two pints, and copaiba resin was detected in it.

The quantity passed daily remained at this point until March 7, and there was no great diminution in the amount of dropsy, the legs resembling "pillows" (to use the words of the physician in charge). The general state of the patient seemed satisfactory, if only she could get out of her water-logged condition. Accordingly, it was determined to make another trial of the copaiba resin. The digitalis mixture was discontinued, and one containing copaiba resin substituted.

On March 9 the quantity of urine passed was four pints; on the 10th, four pints seven ounces; on the 11th, four pints. By the 15th the whole of the œdema had disappeared, and the appearance of the limbs in their shrunken, wasted condition was very striking. The drug was now discontinued, and cod-liver-oil with some iron-wine was ordered, as the little patient was in an extremely cachectic, anæmic state.

Up to March 20 she still continued to pass about four pints of urine daily—an effect which then was not desirable, as she was not in a condition to part with fluid to such an extent in her enfeebled state. It is worth noting that at this time no copaiba resin could be detected in the urine. By March 23 the amount of urine passed had returned to its normal quantity. The patient is now (April 10) about to be discharged.—*Medical Times and Gazette, May* 9, 1874, *p.* 501.

MIDWIFERY,

AND THE DISEASES OF WOMEN AND CHILDREN.

93.—ON THE INDUCTION OF PREMATURE LABOUR.

By Dr. JOSEPH GRIFFITHS SWAYNE, Physician-Accoucheur to the Bristol General Hospital.

[We pass over the first part of Dr. Swayne's paper, which consists of notes of twenty cases in which premature labor was induced, and proceed to his description of his mode of performing the operation.]

In my two first cases before the year 1850, labour was introduced by the old-fashioned methods, viz., by puncturing the membranes and giving ergot in No. 1, and by detaching the membranes around the os in No. 2. After the time mentioned, having read Sir J. Simpson's memoirs on the subject, I always commenced the operation by dilating the os uteri mechanically before puncturing the membrane—a method which is much superior, because it more exactly imitates the natural process of labour. To puncture the membranes before there is any dilatation of the os is to put the cart before the horse, and to invert the process of labour; and, therefore, it is no wonder that such a proceeding, especially when combined with the use of ergot, is more apt to endanger the life of the child from compression of the cord.

Accordingly, in all my other cases (with the exception of No. 4), labour was invariably commenced by dilating the os uteri. In No. 4, the condition of the mother was so critical, that very prompt delivery was necessary, without reference to the child, and there was already some dilatation of the os uteri.

The instruments ordinarily employed for the purpose of dilating the os uteri are tents of sea-tangle or compressed sponge, and the elastic India-rubber bags recommended by Dr. Barnes. My own experience leads me to prefer the sponge-tents, and I now almost invariably employ them, and insert them in the following manner. The patient being in the ordinary obstetric position, the fore and middle fingers of the left hand, well oiled, are to be passed up to the os uteri externum, which is generally sufficiently open to admit the point of one, and sometimes even of both, fingers. A small-sized sponge-tent, about the size, for instance, of an ordinary radish, is to be mounted on a proper stilette, made for the purpose, and passed along the groove between the fore and middle fingers of the left hand, until its point is inserted into the os uteri. The tent is then to be pushed on until a very little of it, not more, perhaps, than a quarter of an inch, projects into the vagina beyond the os uteri. If the os be so high that it cannot well be reached by the finger, the tent may be inserted through a full-sized tube speculum. If also it be very little open, a tangle-tent may be found more convenient to begin with. Care should be taken to push the tent up sufficiently far, as it should be remembered that, two months or so before delivery, there is often a considerable interval between the os uteri externum and internum; otherwise the tent may not pass through the os internum. After the tent is introduced, a piece of soft silk handkerchief may be passed up as a plug to keep it *in situ.* On the day following, this tent should be removed and a large one inserted, and on the next day a tent of the largest size. Generally two, or at most three, tents are required to complete the full dilatation. At this time, probably labour-pains will set in regularly, and the membranes will rupture. Should this not be the case, the membranes may be punctured, and the most convenient instrument for this purpose I have found to be a gum elastic male catheter, of which the end has been cut off, so that the stilette can be protruded at pleasure. Should the pains still be weak or ineffectual, ergot may be given.

Before it was the custom to impregnate sponge-tents with carbolic acid, they used to become very offensive if left in the vagina more than ten or twelve hours, and there was some risk of septicæmia in consequence. I, therefore, never was accustomed to leave a tent *in situ* more than twelve hours. In this time, however, the tent will not dilate to its full extent. I now always leave each tent twenty-four hours *in situ*, and I do not find that there is any risk of septicæmia when carbolised tents are used.

On the whole, I prefer carbolised sponge-tents very much to the elastic bags, because they effect the process of dilatation more steadily, continuously, and gradually, and therefore imitate more exactly the natural process of dilatation, which frequently occupies several days from its first commencement. As a general rule, it is not desirable to dilate the os too rapidly, especially when the time for that operation falls considerably short of the full term, for then there is a proportionally greater thickness of the os uteri to overcome.

Unless there be some special circumstances present which render prompt delivery necessary, it is never advisable to induce premature labour with that rapidity which Dr. Barnes enumerates as one of the advantages of the elastic bags, when he remarks, "that it is just as feasible to make an appointment at any distance from home to carry out at one sitting the induction of labour as it is to cut for the stone." This is, no doubt, one great advantage which we can derive from the use of the elastic bags; but still it is one of which we should do well not to avail ourselves, except under very exceptional circumstances. The chief objection, I think, to the elastic bags, is the difficulty of introducing them. Unless the os uteri is tolerably low, and open enough just to admit the tips of two fingers, it will be much safer to commence the dilatation with a tent of tangle or sponge.

The opposite extreme, of occupying too much time in the process of dilatation, is also to be avoided. If the process occupy more than three or four days, the continual pressure of a foreign body in the os uteri may cause considerable irritation, or even inflammation of the part, which may produce ulceration and softening, and thus give rise to very untoward results, especially if the os be subjected to any undue strain afterwards during the labour. In one of my cases (No. 5), I believe that this cause led to a rupture of the neck of the uterus, and consequently to a fatal result. In this case the child lay transversely; the os was very high, very little open, and very difficult to reach; and I think it very probable that most of the dilators were not passed far enough through the os uteri internum to act very effectually. In this way ten days were consumed in the dilatation, and when the labour came on the child was expelled very rapidly in a doubled condition, and thus a rupture of the neck of the uterus was occasioned, which, although it did not pass through the peritoneum, was sufficient to cause death. There was, no doubt, an unfortunate combination of circumstances in this case; yet it will always be well, I think, if the os be not well dilated in three or four days, to desist from further efforts by these means, and to adopt some other method of inducing labour; or even to give up all attempts for the present, and recommence at the end of a week or ten days. I have sometimes known the labour come on quite unexpectedly, and apparently spontaneously, many days after all efforts to induce it had been abandoned. This happened in one of my own (No. 11) cases.

There is another very effectual way of bringing on premature labour, of which I have had no experience—I mean the intrauterine douche. I have never tried it, because I have been, on the whole, well satisfied with the sponge-tents, and I have been deterred also by the alarming and even fatal results which have occasionally followed its use even in the most skilful hands.

The time occupied by a premature labour artificially induced is very variable. In my own cases, the shortest time was six hours (No. 8), and the longest sixteen days (No. 11). In the first, the woman was in such a critical condition, owing to constant vomiting, that it was necessary to deliver as quickly as possible; and here I experienced the very great utility of Dr. Barnes's elastic bags in causing rapid dilatation. In the second, after trying in vain for several days to induce labour by tangle and sponge-tents, I desisted from further efforts. About ten days afterwards, labour came almost as if spontaneously, and terminated very favourably for both mother and child. On the whole, the average time occupied was about three days.—*Brit. Medical Journal, Aug.* 8, 1874, *p.* 167.

94.—HYDROCHLORAL BY THE RECTUM IN THE VOMITING OF PREGNANCY.

Dr. Simmons, the chief surgeon to Ken Hospital, Yokohama, remarks (New York Medical Record, June) that he does not remember having seen hydrochloral by the rectum recommended in the vomiting of pregnancy. Should this application of it, however, not be new, the results of the following observations may still have their value for or against the conclusions already arrived at. Aware of the suddenness with which this symptom sometimes ceases, after all hopes of saving the mother, without emptying the uterus, has failed, and that, too, without being able to attribute it to any of the numerous remedies which usually have been tried, *except the last*, he has waited for a third case before venturing a decided opinion as to its value. Although he saw these cases only in consultation, especial care was taken to obtain their correct histories. The following is one of his cases:—Patient aged 30; third child. Commenced excessive vomiting during fifth week of pregnancy, which continued, with the usual intermissions, till the tenth week, when he saw her. For several days previous the nausea and vomiting had been almost constant, both day and night. She had become very much emaciated and unable to sit up, even in bed, not having retained any nourishment on the stomach for several days. All the usual remedies had been tried, such as oxalate of cerium, hydrocyanic acid, hypodermic injections of morphine, &c., but with little benefit. He suggested the administration by the rectum, morning and evening, of thirty grains of hydrochloral on mucilage, and this to be increased if there was no improvement, or if the specific effect of the medicine was not too decided. An amelioration of the symptoms was obtained by the first injection, and a still more satisfactory one followed the administration of the second. The second day's use of the remedy arrested the vomiting, except at long intervals, and on the third day both nausea and vomiting ceased entirely. There was no return of the symptom. Some nourishment was taken and retained, even on the second day. From this time the patient rapidly gained strength, and was delivered of a healthy child. Should other opportunities offer for a trial of this plan of treatment, he has decided to commence with larger doses, being convinced that a decided impression, produced by the medicine at first, will require its repetition but two or three times to put an end to the disease, for the time at least. He believes that hydrochloral, administered in this manner, will relieve most cases of nervous or sympathetic vomiting, where there is no inflammation especially. Even in strangulated hernia, on theoretical grounds, it ought to act well, not only in checking the vomiting, but in producing relaxation. He would give it a trial also in cholera.—*Practitioner, Sept.* 1874, *p.* 206.

95.—A CASE OF TWINS WITH DOUBLE PLACENTA PRÆVIA (PARTIAL), AND BOTH CHILDREN PRESENTING TRANSVERSELY.

By Dr. Angus Macdonald, Lecturer on Midwifery at Edinburgh.

In a paper read in October last year before the Obstetrical Society of London, and published in the last Heft of the Archiv für Gynäkologie, Dr. Duncan has advanced an entirely new view regarding the natural mechanism of the separation of the placenta from the uterine surface in cases of placenta prævia. In that contribution Dr. Duncan maintains, and supports by arguments, which to my mind at least seem incontestable, that the spontaneous detachment of the placenta when it presents is not due to contraction or diminution in all directions of the placental area, but to stretching of its uterine attachment through the opening of the lower segment of the uterine ovoid, to form a passage for the child.

In following out this view, Dr. Duncan has defined, more rigidly than Dr. Barnes and others who have travelled this ground before him, the exact limits of the spontaneous detaching area. According to him, the placenta, in an ordinary case of complete placenta prævia, with a full-grown child at full term, ceases to suffer any further separation when the dilatation of the lower segment of the uterus attains a diameter of 11 centimetres, *i. e.*, nearly 4¼ inches. This amount of dilatation, as the result of careful measurements made by Dr. Duncan, is shown to coincide with the circumference of a circle whose plane is at right angles to the longitudinal diameter of the uterus, and whose diameter measures 11 centimetres, whilst every part of its circumference, measured along a meridian line of the uterus, is 6 centimetres distant from the central point of the internal os uteri.

It follows, therefore, that in a case of placenta prævia such as I have been describing, if the head had presented, hemorrhage, due to separation of the placenta, would certainly have ceased some time *before* a segment of the spheroid, formed by the lower extremity of the uterus, with a chord of 11 centimetres, and an arc of 12 centimetres, had been obliterated by the natural dilatation.

I say *before* advisedly, because, even though the case had gone on to full time, such a segment would be the maximum amount of dilatation necessary; whereas in the labour which we have been considering, the smallness of the children rendered the amount of dilatation necessary considerably under a segment with a chord of 11 centimetres.

We are thus, through the labours of Dr. Duncan, brought to such a degree of certainty, or at the very least of approximate certainty, in respect to the natural limits of bleeding in cases of placenta prævia, which is a very great advance upon the bewilderment induced by theoretical ideas regarding indefinite and indefinable zones.

But notwithstanding all that has been previously written upon this subject, and making full allowance for the above-mentioned and the three other able and more recent contributions of our President to the Edinburgh Medical Journal and the British Medical Journal, in regard to the origin and mode of arrestment of this kind of hemorrhage, much has still to be done, as the whole subject is still enveloped in very much mist.

If I might venture a criticism upon Dr. Duncan's theory of the origin and mode of arrestment of bleeding in such cases, which has been lately put forward and ably advocated by him, it is that I think he has paid too little attention to the curling arteries as a source of such bleeding, and too much to the venous sinuses in the placental area.

Dr. T. Snow Beck, in the Obstetrical Journal for December, 1873, and January, 1874, has endeavoured to revive the views originally brought forward by Dr. F. W. Mackenzie on this subject. He maintains, supporting his arguments especially by reference to Dr. Mackenzie's experiments, that in bleeding from the uterine surface the bleeding is arterial and direct. On the other hand, Dr. Duncan would have it an indirect oozing, the arteries inside of the uterine wall bleeding first into the sinuses, and then the sinuses discharging their blood into the cavity of the uterus through its free surface. Dr. Duncan does not hold that the bleeding is regurgitant, in the sense that it is a reflux from the veins leading from the uterus towards the heart back again into the uterine sinuses.

Now, though I have not sufficiently studied this exceedingly intricate subject so as to be able to take up the strongly affirmative position defended by Mr. T. Snow Beck, I must confess that my leanings are towards his views, and I consider the facts, experiments, and arguments advanced by him, deserve a larger amount of attention from the thoughtful accoucheur than they have as yet received. It would be a great gain if the profession thereby were only led to abandon the exceedingly unphysiological and provedly hazardous treatment of post-partum hemorrhage by means of injections of perchloride of iron, and to get free of belief in the dangerous nature of the exceedingly effective—and, as I am glad from extended experience for several years back to be able to testify, in perfect accordance with the views of Dr. T. Snow Beck—completely innocuous mode of arrestment of hemorrhage post-partum by injection of cold water into the uterus.

But this is rather departing from my subject. In reference to the course of the bleeding, I would beg to state that the late Professor Goodsir—than whom I am sure the members of this Society will allow, a more patient, more able, or more careful observer never lived—used in his lectures on the anatomy of the uterus to substantiate the views of Owen and of Simpson in regard to the platform arrangement of the uterine veins, and to describe the manner in which the successive platforms opened into each other obliquely, with the free edges projecting in such a manner as to act substantially as valves, and thus to prevent the escape of blood from a higher platform to a lower. I feel convinced that though it is difficult to understand how such small vessels, numerous though they be, as the uterine curling placental arteries, may give rise to such severe bleeding, both in connexion with placenta prævia and in hemorrhage post-partum, yet the difficulties, on the other hand, to account for the arrest of hemorrhage from the open uterine sinuses without the contraction of the organ, are still more difficult to meet.

In regard to this point, I do think that the existence of some such anatomical arrangement of the veins, such as Owen and Goodsir pointed out, gets us more rationally and easily over the difficulty than to trace it to the obstruction due to a change of shape in the uterine sinuses effected in the course of the dilatation of the uterine placental area, consisting in the elongation of them in the lateral direction, and the approximation of their walls in the longitudinal direction, as Dr. Duncan urges. I do not think that Dr. Duncan, even when backed up by the great and justly respected name of Professor Tait, proves that point well. This part of Dr. Duncan's paper is to me not at all convincing.

Before such change in the shape of the discharging orifice could be effective as a hemostatic means, I feel certain that we would need a diminution of the discharging area in all directions; for I cannot imagine the mere friction of the opposed surfaces of openings, so large as those sinus openings are, to be able to resist the degree of tension, often great, to which the maternal blood in the uterine walls is subjected, both in placenta prævia and otherwise. In the case of the small curling arteries again, supposing them to be sources of hemorrhage, we have the greater contractility of their walls, the fact, also, that the separation is by tear, and not by cutting, and the exceedingly small diameter of the vessels, uniting, to afford conditions specially favourable for the process of nature's hemostatics. Only in cases where the general blood-pressure was specially exalted, or in which the retentive power of the abdomen (so ably and convincingly urged by Dr. Duncan as one of the means by which the bleeding is arrested from the free surface of the uterus, in cases of placenta prævia) was defective, would the natural hemostatic means afforded by the torn surface of those arteries be expected to fail, provided we could account for occlusion of the sinuses by any certain means. That the veins inside the uterus have such an arrangement as could make their various platforms incapable of transmitting blood from a higher to a lower level is my contention, supported by the experiments of F. W. Mackenzie, and the dissections of Owen and Goodsir.—*Edinburgh Medical Journal, May* 1874, *p.* 995.

96.—ON SOME IMPROVEMENTS IN THE SINGLE AND DOUBLE CURVED FORCEPS AND THEIR USE IN MIDWIFERY PRACTICE.

By Dr. THOMAS MORE MADDEN, lately Examiner in Midwifery in the Queen's University in Ireland.

[There can be little doubt that the dangers of childbirth have been lessened of late years by the more frequent and judicious use of the forceps, in the construction of which instrument it is the object of this paper to describe some modifications.]

Upwards of a century ago the forceps appears to have been very generally and indiscriminately resorted to in midwifery practice in this country. A reaction in professional opinion then set in, extending against even its legitimate use, and so far did the prejudice go that for many years the only instrumental assistance afforded in cases of difficult labour was craniotomy, or, as Sir James Simpson well said of this operation and its results, "Cold steel for the child, and mercury for the mother."

The comparative advantages of the straight and double curved forceps have been warmly disputed from the days of Smellie and Leveret to the present time. The controversy, although recently revived, is interesting only on account of the ability with which it has been conducted; as there can be no just or useful comparison between objects which, like the instruments now referred to, are essentially different, and adapted for distinct purposes: the short forceps being intended for cases where the head is detained, generally by inertia, in the cavity of the pelvis, and where only slight traction is required to effect delivery; the long forceps, on the contrary, is not only a tractor, but is also a powerful lever by which an impacted head may be moved, as well as a compressor, by which its size may be sufficiently diminished to admit of its passage through the pelvis.

I shall now describe the single and double curved forceps which I exhibited at the last meeting of the British Medical Association in London. The first, or straight forceps, is designed for ordinary cases of delay in the second stage of labour, being a very powerful tractor, although remarkably light and small. Its weight is only eight ounces, and its length ten inches, the blades being six inches, and the lock and handles four inches. The greatest space between the blades when locked is two inches and seven-eighths, and between the points one inch and a quarter. Particular attention has been paid to the avoidance of any sharp edges or points. The curve of the blades is by no means as sharp as is the case in the ordinary forceps, and commences half an inch above the lock, the intervening shank being beveled internally, and bent outwards, so as to form a space for the finger of the operator. The fenestra, which extend throughout the blades, are very wide, so that the scalp may protrude and cover the rims, thus protecting the maternal passages during the extraction.

Having now employed this instrument in upwards of a hundred cases, and also received accounts of its use in other countries from several former pupils of the hospital, I venture to recommend it as being much easier of application and better adapted for ordinary cases of delay in the second stage of labour than any of the longer or double curved forceps.

It has been proved that the dangers of the puerperal state bear a certain relation to the length of the second stage of labour, the physiological duration of which cannot be safely much prolonged or much shortened. It is obvious that the natural process of childbirth should never be unnecessarily and rudely interfered with by rash and premature recourse to instruments. But, on the other hand, it cannot be allowed to run on indefinitely until the parturient woman is worn out by protracted suffering, without greatly increased risk of puerperal fever and other diseases of childbed, as well as of more immediate danger from post-partum hemorrhage, the result of exhausted uterine contractility. Inflammation and sloughing of the vaginal walls, leading to vesico-vaginal or recto-vaginal fistulæ, rupture of the uterus and the death of the child from the long-continued pressure to which it is subjected in protracted labours, are also amongst the occasional consequences of undue delay in affording timely instrumental assistance when it is required. In the great majority of cases this purpose may be easily accomplished by my short forceps, which is not only efficient but portable, and may be applied without causing the patient any pain, or, if necessary, even without changing her position in the bed.

My modification of the long forceps, although a somewhat complicated-looking piece of mechanism, is intended to alleviate the use of instruments far more formidable, being especially designed to effect safe delivery in cases in which a few years ago the only operation resorted to was one involving the death of the child, and occasioning greater danger to the mother than now attends the cautious application of the long forceps, by which both may be saved.

This instrument combines the action of a powerful lever and tractor with those of a compressor, the power of which may be exactly regulated in each case at the will of the operator, and which may thus vary from the most gentle and almost imperceptible pressure on the child, which is generally sufficient, to an amount of compressing force which is very seldom necessary, and of which we should be slow indeed in availing ourselves. The weight of this forceps is twenty-six ounces, and its length eighteen inches. The blades occupy ten inches, of which seven are taken by the fenestrated portion and three by the shanks; the greatest space between the blades when locked is about two inches and three-quarters; the lock and handles are eight inches long. The latter are movable, and thus it is made portable, and may be applied in the ordinary obstetric position. When a greater degree of power is required, the handles are adjusted, and the patient is then placed on her back for the operation. To the handle a rack and pinion is attached, and these are connected by a screw which regulates the amount of pressure exercised on the child's head. The traction power of the instrument is increased by strong shoulders, and, owing to the length of the shanks, there is no danger of nipping the soft parts during the locking. The curvature of the blades is less acute than in ordinary forceps, in which it is generally that of a section of a circle so much larger than the fœtal head that the instrument is in contact with the head at only two points, on which excessive pressure must be made, and from which it is liable to slip; whereas in my forceps the blades were carefully moulded on a number of average-size fœtal heads, until a curve was obtained which allows the most perfect apposition between the blades when *in situ* and the child's head. Thus the possible injurious effect of the compressing power of the instrument, as well as the danger of its slipping, are both reduced to the minimum.

The power of the long forceps as a compressing instrument is not generally sufficiently appreciated. I have elsewhere discussed this question, and have shown that it is possible to compress a child's head with the forceps sufficiently to enable it to be extracted through a pelvis rather smaller than its natural diameter. No argument is necessary to prove the extraordinary compressibility of the fœtal head. Every tyro in midwifery is cognisant of the extraordinary manner in which the child's head may be moulded or lengthened out by the pressure to which it is subjected during protracted labour, without any permanent injury, and the intention of using a compressing forceps such as mine is to imitate and supplement this natural moulding process in cases where the *vis a tergo* does not suffice to overcome some obstacle to delivery.

Living children have been extracted through pelves measuring three inches in their widest diameter; therefore it does not follow that because a woman's pelvis is small, or even somewhat deformed, she must be delivered by craniotomy or cephalotripsy. On the contrary, I have myself recorded cases which prove that even under these circumstances, the forceps may sometimes be used with success; and in no less than twenty-nine of my forceps operations, there was some degree of disproportion.

Amongst the other cases in which the instrument may be resorted to are difficult labours, where the fœtal head is prevented by malposition from passing the brim. I have also employed it in deliveries complicated by convulsions, accidental hemorrhage, prolapse of the cord, premonitory symptoms of rupture of the uterus, and in one fatal instance of this accident.

When the symptoms are so urgent as in these cases, there is no doubt as to the propriety of delivering with the forceps, as the os uteri can be sufficiently expanded; but nothing short of such necessity justifies instrumental assistance before it is fully dilated. Nor should this instrument be ever resorted to in cases of simple inertia until other means, such as change of position, friction over the fundus, ergot, and stimulating enemata have failed.

With regard to the manner of using these forceps, I may add a few words, as they each differ in several respects from the instruments generally employed. In the first place, the application of the forceps should, when possible, be previously sanctioned by a consultation. Immediately before operating, a dose of ergot should be given, and the catheter passed. The patient may then be put under the influence of chloroform, although this is seldom necessary when the short forceps is used. In order to apply my straight forceps, the patient should be placed on her left side, with the hips projecting over the edge of the bed. The operator now introduces the index and second finger of his right hand into the vagina until he reaches the child's ear, between which and the symphysis pubis the upper or right-hand blade of the forceps, lightly held in his left hand, is to be gently insinuated until the lock presses on the perineum, where it is to be supported by an assistant. In a similar manner the left-hand blade is to be passed in, held, of course, in the opposite hand, and passed around the child's head till the handles come in contact, and the locking is effected without any force whatever. The extraction of the head may be now accomplished by drawing very slowly and gently in the direction of the curve of the pelvis, first downward and backward, then downward and forward, and lastly, as the head passes through the pubic arch, directly forward, until the head protrudes from the vulva; when the instrument should be unlocked and withdrawn, and the delivery completed by pushing out the head by pressure with the hand from the coccyx over the perineum.

These directions, with a few differences, may be followed also in the use of my long forceps. The same preliminaries being adopted, the patient should be placed on her back in the lithotomy position if possible. If, however, as sometimes happens, it is found difficult to overcome the prejudice here generally existing against this position, the instrument may be used in the same manner as the short forceps, the patient lying across the bed on her left side, with the hips projecting. In using the long forceps, it will be found easier to introduce the left-hand blade first, whereas with the short instrument, the upper blade is first applied. Before passing it, the instrument may be locked so that the operator can see that the blade he selects first will look forward when *in situ*, or, in other words, that its curve will correspond with that of the pelvis. When the head is high up above the brim, the hand should be introduced till the ear is felt, not that it is always necessary to apply the long forceps in this situation, but it is always necessary to guard the uterus from the instrument, which should be cautiously passed between the operator's hand and the child's head in the transverse or oblique diameter of the brim of the pelvis. The introduction of the second blade and locking require no further observation. When properly adjusted, though locked, the handles of this instrument should not come closely together; they may therefore be very slowly and gently brought nearer each other by the screw at their extremity, but no force is to be used, nor any violent effort made to approximate them under any circumstances. In the extraction with this forceps, there is nothing to be added to what has been said on that point in reference to the short forceps, except that the natural direction of the handles will point out the direction in which we are to pull at each stage of the operation, so that we may use our traction force in the direction of the axis of the pelvis. In no stage of either of these operations is any violence ever necessary or justifiable.—*Lancet*, *June* 20, *p.* 865.

97.—ON THE USE OF PERCHLORIDE OF IRON IN POST-PARTUM HEMORRHAGE.

By Dr. Lombe Atthill, Vice-President of the Obstetrical Society of Dublin.

It is much to be regretted that the discussion which has hitherto taken place on this point has not been carried on with greater calmness. The question to be decided is one to which too great weight can hardly be attached. If the perchloride of iron be a remedy as safe as it is avowedly efficacious, its use should without doubt, be encouraged. If, on the other hand, its employment be fraught with such danger as is maintained by some, we should, with equal distinctness, reprobate its use under almost any circumstances. This being the case, it is a matter of deep regret that some of the writers who have taken part in the discussion—not yet concluded—should allow themselves to be drawn into the grave fault of substituting assertions for facts, uncourteous denials for proofs, and to forget themselves so far as to indulge in pungent sentences, which, however clever as retorts, savour more of personal antipathy than of scientific argument. Such papers, however agreeable to read, fail utterly in deciding in any way the value of the plan of treatment under consideration: that can be effected alone by carefully recording the cases in which the treatment has been tried, and the results. Such records should state the condition of the patient at the time when the styptic was injected, its immediate effect, and the termination of the case. The points to be decided, in my opinion, are three—

1st. Do cases of post-partum hemorrhage occur which we have reason to believe would terminate fatally, or at least in which life is seriously endangered, notwithstanding the judicious use of the remedies ordinarily employed for the arrest of hemorrhage?

2nd. Is the injection of a solution of the perchloride of iron of itself a dangerous remedy? and

3rd. If so, are the dangers likely to follow its use such as to outweigh its obvious advantages as an agent capable of effecting with almost certainty, the further loss of blood?

In order to aid in some degree in the elucidation of these most important questions, I shall detail the particulars of the cases in which the solution of the perchloride of iron has been injected into the uterus for the arrest of post-partum hemorrhage in my private practice, hoping that my doing so may induce other members of the Society to bring forward the facts connected with similar cases, and that as a result, some practical inferences may be deduced on which sound rules for future practice may be based.

This I will assume as proved, that the perchloride of iron applied to the interior of the womb is an efficient hemostatic. To my judgment this much is conclusively proved.

I think the first of these three questions I have put down for discussion will be answered in the affirmative all but unanimously. Dr. Barnes and Dr. Gream state that they have "never seen a woman die from post-partum hemorrhage when under their own care from first to last." I regret to say my practice has not been equally successful. I have lost at least one patient of post-partum hemorrhage, whose bed-side I never left from the termination of the first stage of labour till death ensued, and whose labour, up to the occurrence of the hemorrhage, which did not set in till after the expulsion of the placenta, was in all respects easy and natural. In her case I exhausted all the ordinary methods employed for the arrest of hemorrhage, but my patient died before my eyes. I admit, however, that I did not rely on the use of brandy to the extent recommended by Dr. Gream. I gave it freely, both by the mouth and by the rectum. No doubt Dr. Gream would say the fatal result followed simply because "I did not give enough." But if I did not give it by the half-pint, I gave it by the ounce, and the large doses of alcohol I did give were nearly useless, because they were rejected as fast as swallowed. Moreover, I regret to say, I did not inject the perchloride of iron. It was the first case of severe hemorrhage which occurred in my practice after that method had been brought under my notice by Dr. Barnes; and, like many of my brethren now-a-days, I feared to use this, to me, new and powerful remedy. I now firmly believe that to this timidity the death of my patient—a young wife and a young mother—was due. I feel that she might still be alive if only I had used a remedy I knew of, but had not the courage to employ. This, however, I have to compensate me, that though since then I have stood beside the bed of more than one whose life seemed to me in greater peril than hers, to whom I have just alluded, no such scene as that I then witnessed followed, nor do I believe it ever will again. The lesson I that day learned taught me the utter inutility of the "ordinary means at our command" for the arrest of post-partum hemorrhage in a certain class of cases.

I shall now lay before the Society the particulars of the following five cases which have occurred in private practice. I should add that I have seen the perchloride of iron used in other cases, but as they were not those of patients directly under my own care, I do not refer at present to them, but shall merely premise that, so far as I am aware, no unfavourable symptom subsequently occurred in any of them.

Case 1.—This was, I believe, the first occasion in which the perchloride of iron was used in Ireland. The patient was the wife of a medical man, who, never robust, suffered much from sickness of the stomach during her pregnancies. She was an example of that numerous class of women whose health is often permanently injured from the habit, frequently I believe, acquired, of taking an altogether insufficient quantity of food. Her husband assured me that during the whole of her married life, the quantity of food consumed by her day by day was so small that, to use his own words, "she ate nothing." During this her fourth pregnancy her appetite, always small and capricious, was further impaired by constant nausea and frequent vomiting. Some hemorrhage occurred on the morning of the 11th July, 1862. She was then in the eighth month of her pregnancy, but the loss was so slight she did not think it needful to send for me, especially as there were not any pains present. Her nurse-tender, however, calling by chance, she kept her in the house: after a time sharp pains set in, and the labour terminated rapidly in the birth of a dead child. Slight hemorrhage continued during the progress of the labour, which terminated under the sole charge of the nurse-tender. The placenta was expelled almost immediately on the birth of the child. The hemorrhage, however, continued, and the husband, becoming alarmed, sent for me. I was from home, and the messenger proceeded to Dr. Kidd's. He has given me the following note of the case:—"The lady lived some distance out of Dublin. Her husband, a medical man, wrote to you saying she had been delivered some hours, and was very weak from the effects of post-partum hemorrhage, which was still going on. As you were from home, the note was sent to me, and I at once visited her, taking with me a syringe and a solution of perchloride of iron, with which I had for some time been provided, in consequence of reading Dr. Barnes's papers on the use of the perchloride. When I arrived I found the lady in a state of extreme prostration; the surface was cold; she was almost pulseless, throwing her arms about, and begging to be allowed to set up and get air. A skilful nurse was holding the uterus. For some time after my arrival I took charge of the uterus myself, and found, as the nurse had said, that the moment the pressure was removed the uterus relaxed and the bleeding returned. It was evident she could not bear the loss of more blood, and that there was no time to be lost, so I proceeded to inject the solution of the perchloride of iron as directed by Barnes; this at once checked the bleeding; the uterus contracted and remained firm. I applied a bandage, gave brandy and opium, got hot jars and flannels to the surface, and watched her closely till reaction was fully established; by this time you had arrived, and took further charge of the case."

The condition of the patient when I saw her, fully confirmed the account given by Dr. Kidd; reaction was established, but the patient was still in a most precarious condition. She was greatly exhausted, the exhaustion being kept up by incessant vomiting, which had set in immediately after the birth of the child, and which, notwithstanding the arrest of the hemorrhage, continued with unabated violence. Brandy, opium, ice—all were tried, and all failed to check this at first distressing but now alarming symptom. Tinct. opii injected into the rectum was equally inefficacious; at last I thought of trying the hypodermic injection of morphia—a remedy I had at that time but little experience of. I injected half a grain of the acetate of morphia; this had an instantaneous effect. She did not vomit once afterwards, and from that moment improved and made a good recovery. I have since then attended this lady in two confinements, both of which were perfectly normal.

As I have already mentioned, this was the first occasion in which the perchloride was used in Ireland for the arrest of post-partum hemorrhage, and I firmly believe that to Dr. Kidd's promptitude in using it this patient owes her life.

Case 2.—Mrs. C., a pale delicate-looking lady, aged twenty-three, with an anemic murmur, audible at the base of the heart, gave birth to her second child on the 16th October, 1869, after a short labour of but four hours' duration. The placenta was expelled in about fifteen minutes after the birth of the child. During this interval I kept my hand constantly on the uterus. It contracted firmly, and I applied a binder. Shortly after a small stream of blood was observed to trickle down from the vagina. On loosening the binder, I found that the uterus had become relaxed. The application of my hand caused it to contract immediately, and some clots were expelled. This alternate contraction and subsequent relaxation of the uterus, so often seen in the case of women with relaxed muscular tissue, was repeated several times. The total quantity of blood lost was not large, but it told greatly on this delicate and fragile lady. Cold judiciously applied, ergot, friction, &c., failed to produce more than temporary contraction of the uterus. The fatal case of post-partum hemorrhage I have already alluded to was fresh in my memory; it had occurred in my own practice and in a very similar patient but a few months before. The successful result of the case just detailed had lessened, if it had not altogether removed, my dread of the action of the perchloride of iron. My patient was in a critical state—indeed, to one in her state of health, of great danger. I resolved to use the perchloride of iron, and accordingly injected about an ounce of the liquor of the perchloride of iron, B. P., diluted by the addition of three ounces of water, into the uterus. The effect was instantaneous—the uterus contracted much more firmly than before, and *did not again relax.* Not a drop of blood was subsequently lost. This lady recovered without a bad symptom, and has been confined twice since.

Case 3.—In July, 1870, I was requested to visit a lady, the wife of a medical man, who expected her first confinement in about a month's time. Her general health was very bad; she had suffered much during her pregnancy from sickness of the stomach, which, though it had now ceased, had reduced her strength greatly. She was unable to eat any solid food, her appetite, such as it was, being extremely bad and capricious. She was very large, and quite unable to take exercise. She suffered besides from severe pain in her back, and along the margin of the false ribs. Her complexion was sallow, and her aspect indicated much suffering. I felt anxious as to the result of her confinement. Labour set in during the night of the 1st of August, 1870; the pains in the first stage, which occupied upwards of ten hours, were short, harassing, and inefficient; in the second stage they were equally inefficient. The head descended slowly into the pelvis, but did not advance further, and finally, after the lapse of fifteen hours from the commencement of the labour, I applied the forceps, and delivered her of a living child. Ergot had been previously given, but sickness of the stomach rendered it useless. Immediately after the birth of the child some hemorrhage occurred, and I removed the placenta by pressure. Its expulsion was followed by the most copious and alarming hemorrhage I ever witnessed. The blood gushed out in such a copious stream, that the bed was saturated and the floor deluged with it, in a shorter space of time than it has taken me to pen these lines. My hand all this time was on the uterus. In a few minutes life seemed extinct in this previously debilitated and exhausted woman. As rapidly as I could, and without having recourse to any of "the ordinary means," I injected some ounces of a diluted solution of the perchloride of iron. It acted at once—the hemorrhage was arrested, and my patient slowly revived. On the third day she was wonderfully well, and continued so to improve till the tenth day. Then she had a rigor, the pulse rose rapidly to 160 in the minute, well-marked symptoms of peritonitis subsequently set in, and she died on the fifteenth day after delivery.

Case 4.—Mrs. L., a delicate lady, whose health had been very bad during pregnancy, gave birth to her first child on the 9th Oct., 1871, after a labour of eighteen hours' duration, a living child. The second stage occupied two hours. The child presented with the feet. After the expulsion of the placenta hemorrhage set in, as in Case No. 2. Notwithstanding the use of "the ordinary means," the hemorrhage continued; the uterus would contract, but not firmly, and a constant stream of blood trickled from the vagina. The patient was greatly exhausted, and became very faint. I injected, as in case No 2, about four ounces of the solution of the perchloride of iron, in the proportion of two parts of water to one of the liquor. The uterus instantly contracted firmly, and no more blood was lost. This patient, considering her constitutional delicacy, made a good recovery, and became pregnant again early in last year. Her labour on this occasion forms—

Case 5.—Labour on this occasion set in soon after midnight on the 27th of October, 1873. During the whole of her pregnancy her health had been so bad that I looked forward with much apprehension to her confinement. She suffered, from the very commencement of utero-gestation, from constant sickness of the stomach. This was not mere nausea, with occasional vomiting, but almost everything swallowed was rejected. She had besides the most absolute loathing for food. The tongue was also coated with a thick yellow fur. The bowels were alternately obstinately constipated or violently relaxed. She had, in addition, two severe attacks of illness—the one of inflammatory sore throat; the other of inflammation of the ear, terminating in abscess. For weeks at a time she was supported by means of enemata of beef-tea and brandy, and more than once during the course of her pregnancy I seriously considered the propriety of inducing premature labour. Labour set in soon after midnight on the 27th October. The first stage was very tedious, and occupied upwards of twenty hours. So utterly inefficient were the pains that I formed the opinion that the uterus opened by a process of mere relaxation, no appreciable pressure being brought to bear on it by the uterine contractions. As soon as the os uteri was fully dilated I ruptured the membranes, and commenced administration of ergot—not with the view of hastening the labour, but of the preventing the occurrence of post-partum hemorrhage. The drug was, however, vomited. The head did not enter the brim; it appeared simply to rest on it—the short, inefficient pains being altogether powerless to cause its advance. I, therefore, applied the long forceps. This was effected with ease. I extracted very slowly; the operation occupied, on this account, nearly forty minutes. The pelvis was roomy and the child small; no difficulty, therefore, was experienced in extracting the child, which, though very feeble, ultimately lived. The uterus, somewhat to my surprise, contracted well. Mindful of the tendency to post-partum hemorrhage exhibited after her former labour, I had, before I applied the forceps, not only administered ergot in combination with strychnia, but had in readiness, in adddition to cold water, &c., a vessel containing two ounces of the liquor of the perchloride of iron, diluted with four of water; but my precautions seemed needless. The placenta was in due time detached and expelled, with the aid of gentle pressure applied to the fundus. After its expulsion I still continued for some time to keep up pressure with my left hand on the uterus. As it continued firmly contracted, I then applied the binder, with pads under it, firmly. All seemed so well I thought I might soon with safety leave the patient, when, after the lapse of more than half an hour, she began again to vomit—a copious stream of blood instantly issued from the vagina, and before I could unpin the binder the uterus was so relaxed as to reach above the umbilicus. The pressure I applied seemed only to increase the flow of blood, without exciting any contraction. In five minutes my patient was almost pulseless. This seemed to my mind one of those desperate cases in which I dare not lose time by the employment of what I was satisfied in her case would prove to be inefficient remedies. I therefore at once injected about four ounces of the solution I had fortunately previously prepared. The hemorrhage was at once arrested, the uterus contracted, but so nearly had life been extinguished, that two hours elapsed before the pulse returned with any degree of firmness to the wrist, or that I dared to leave the bedside of this patient; and so great was the subsequent prostration, that for two days she lay in a state of semi-unconsciousness. She swallowed mechanically beef-tea, brandy, &c., when placed to her lips, but never spoke except when roused. The urine was drawn off with the catheter, the bowels did not move, there was not any attempt at the secretion of milk. Her condition, however, slowly improved, no bad symptoms occurred, and she regained in time her usual health. I understand that she is now (March, 1874) again pregnant.

The foregoing five cases occurred in my private practice, and I had an opportunity of judging not only of the previous state of health, but of tracing the subsequent history of each patient. I desire to comment on some points which appear to me of importance, and as calculated to guide us—first, as to the class of cases in which the injection of a styptic into the uterus for the arrest of post-partum hemorrhage is likely to be most useful; and secondly, as to its subsequent effects on the patient.

1st. It is noteworthy that the only cases which seemed in my practice to demand this treatment were women in a previously bad state of health. Case No. 1 was that of a lady who not only suffered from sickness to an excessive degree during pregnancy, but who for a long time previous to, and of course also during her pregnancy, consumed almost no food, and what she did take was of an improper character. No. 2 was markedly anemic. No. 3 was in such bad health as to cause much alarm to her friends on this account prior to labour. Cases Nos. 4 and 5 were the same patient. She, too, was on both occasions in a very bad state of health—so bad indeed, that the induction of premature labour seemed more than once demanded. In all it may be fairly assumed that the blood was in an abnormal condition, probably destitute of its proper proportion of fibrine. This seems specially likely to have been so in Case 2, in which, though the uterus contracted fairly, the hemorrhage continued.

2nd. As to the results.—In three of the four patients pregnancy subsequently ensued; this fact proves clearly that the injection of the perchloride of iron in no way injured the uterus.

In four of these five cases, notwithstanding previous bad health and the great loss of blood sustained at the time, no unpleasant symptoms of any kind subsequently presented themselves. In one case death ensued. Taking into account her previous ill-health and the acknowledged tendency which always exists to the occurrence of peritonitis after excessive losses of blood, it hardly seems a reasonable inference that in her case death was due to the effects of the injection of the styptic. The Society have, however, before them all the facts which I am possessed of, for no post-mortem examination was possible. My own opinion is that this patient would probably have died whether the perchloride had been injected or not. Pyemia, phlebitis, and peritonitis have, as is well known, carried off numbers of patients who have suffered from post-partum hemorrhage, long before the injection of a styptic for its arrest was proposed, the debility resulting from the loss favouring the occurrence of these forms of disease; and in the case of the patient under consideration, the state of her health previous to labour aggravated the danger, to which all cases of hemorrhage are liable. But even were it proved that her death was the result of the use of the perchloride, a further question has yet to be decided—namely, this, believing as I did, and still do, that this patient would have died from hemorrhage, and that in a few minutes, was I justified in using an agent which alone, in my opinion, was capable of saving herlife? supposing it to be proved that in a certain proportion of cases the use of that remedy would be followed by fatal results.

This question seems to me to be identical with that which is involved in deciding on all capital operations, notoriously in that of ovariotomy, and that it must be decided on the same principles. I shall not, therefore, discuss it further.

For myself I have arrived at the following conclusions:—

1st. That cases of post-partum hemorrhage occur in which the injection of the perchloride of iron, or some similar styptic, is alone capable of arresting the hemorrhage.

2nd. That the injection of such styptic does not necessarily increase the tendency which exists in such cases to the occurrence of pyemia, septicemia, or peritonitis.

3rd. That this treatment is specially applicable to anemic patients.

4th. That while it should never be had recourse to unnecessarily, it should not, on the other hand, be delayed too long.

I may add that in using the solution of the perchloride of iron, I carry out in the main the directions given by Dr. Barnes. I have not, however, in any case injected more than six or eight ounces, sometimes as little as four ounces of the fluid. I also use it somewhat stronger than he does—namely, in the proportion of one part of the strong liquor, B.P., to two of water. The important point in using it is to take care that the end of the tube is passed up to the fundus of the uterus, and that the fluid be injected slowly. I should add that I have not met with any case in which the uterus did not immediately contract firmly on the perchloride being injected. I am inclined to attribute this to the fact that I had recourse to the remedy before the powers of the patient were so exhausted as to render the uterus incapable of responding to the stimulus.

Before concluding this paper, I desire to say a few words as to what are "the ordinary means" employed for the arrest of post-partum hemorrhage. They are the administration of ergot, pressure and friction on the fundus of the uterus, and the application of cold; these, with the addition of the free exhibition of brandy or other stimulants, may, I think, be considered the means ordinarily had recourse to by practitioners.

As to ergot, it is a most uncertain agent, and while most useful if administered some time before the occurrence of the hemorrhage, is, in my opinion, seldom of much value if given after it has set in. Ergot takes at least twenty minutes to act, and besides is often in these cases vomited. Injected hypodermically it is, I believe, capable of doing much good, but its irritating properties, when thus used, render this method of employing it not altogether unobjectionable. I am at the present time engaged in endeavouring to obtain an efficient and, at the same time, unirritating preparation of this drug for hypodermic injection. As yet I have been unable to obtain any definite results.

The value of pressure on the fundus, if it be judiciously applied, can hardly be over-estimated; but the most carefully applied pressure, or pressure combined with friction, will at times fail to check the flow—in spite of all, the bleeding will go on.

Cold, one of the most potent means at our command for stimulating the uterus to contract, is frequently useless—nay, more, often positively injurious in consequence of its being improperly used. To do good it must cause a shock. It must, therefore, be applied suddenly while the patient is warm. Its application should never be unduly prolonged, for if once the temperature of the body be so reduced that cold, no matter how applied, fail to produce reaction, the uterus will not contract, and the hemorrhage will be in no way checked. Therefore, while I am not prepared to say that cold water should never be poured from a height on the patient, I decidedly object to such a practice, for it necessitates the exposure of a large surface of the body, and the saturating and therefore changing of the bedding. Injecting cold water into the rectum is generally a safe and often an efficient method of employing cold; but to be of use, it requires to be done before the patient has become exhausted. Injecting water into the uterus is, I believe, on the contrary, by no means a safe practice. The advocates of this practice tell us that "the injection (of cold water) should be continued till the fluid returns clear." This procedure is, in my opinion, far from being free from danger. I believe it to be quite as likely to be followed by serious consequences as the injection of the solution of the perchloride of iron, while it is far less efficacious. If had recourse to at all it should be done early, and the quantity injected should be but small. Cold water should never be injected into the uterus of a patient exhausted by excessive loss of blood.

Ice introduced into the uterus or rectum will, if the patient be not too much exhausted, cause the uterus to contract. But how seldom is it possible to obtain ice at the moment, and, if attainable at all, much time must generally elapse before it is at hand, and then it is in general too late to be of real good, for, as in the case of the injection of cold water, to be of use it should be used promptly. If it does not succeed at once, its further use can only be productive of mischief. It therefore cannot, for many reasons, be relied on as an efficient agent for the checking of post-partum hemorrhage.

Of the other means advocated for this purpose, and which cannot be classed among the "usual" ones, the introduction of the hand into the uterus is that which is most frequently advocated. There can be no doubt but that in some cases this treatment has proved efficacious. On the other hand, it certainly cannot be relied on. Thus, to quote reliable authority, Drs. Hardy and M'Clintock, give the particulars of a case which proved fatal from the loss of blood, and in which the hand had been introduced into the uterus. The recorded cases in which this plan has been adopted are so few, and the termination of the case, even when the hemorrhage has been checked, so uncertain, that no positive inference as to its value can be drawn. But for myself, I have always looked on the method as one not free from danger. The introduction of the hand into the uterus is far from being a perfectly harmless operation. In this opinion I am borne out by the fact recorded by Drs. Hardy and M'Clintock, that Dr. Charles Johnson, the then Master of the Lying-in Hospital, looked on this practice with great disfavour, and Dr. Johnson's opinion carries great weight, at least with such of us as remember that able practitioner and accurate observer.

My object in making these concluding remarks has simply been to show that the means at our disposal for the arrest of post-partum hemorrhage are far from being reliable, and of what importance it is to add to their number one so powerful as the injection of a styptic solution.—*Obstetrical Journal, May* 1874, *p.* 107.

8.—ON THE INJECTION OF PERCHLORIDE OF IRON INTO THE UTERUS FOR THE ARREST OF POST-PARTUM HEMORRHAGE.

By Dr. Evory Kennedy, President of the Obstetrical Society of Dublin.

[The following remarks of Dr. Kennedy on the new practice of applying perchloride of iron are most important and true.]

Dr. Kennedy wished it to be distinctly understood that, although, as they were aware, he was not averse to the introduction of any improved system of treatment that might be applied to the present or any other branch of obstetrics brought before the Society, yet he must warn them that it was very hard to teach an old dog tricks. It appeared to him that one of the chief advantages of having an experienced man in the chair was, that, in case of novelties being introduced, it was for that man to give his opinion honestly and fairly on the merits of any novel practice that might be brought forward; more especially by contrasting its advantages and disadvantages with those confirmed, in his own mind, by his own experience, as well as by the experience of his predecessors and contemporaries. At the same time it was equally his duty to warn them that, whilst on the one hand they were liable to fall into error by hastily grasping at every novelty that might spring up, on the other hand they should bear in mind that the greatest obstacle to the progress of knowledge was scientific incredulity, and the inveterate conviction on the part of those claiming to be men of experience, that their knowledge could not be improved upon. With this prelude he asked them to take at its value what he was going to say. He could look back for a long time of hospital and of private practice in the treatment of hemorrhage, and having refreshed his memory by reference to his notes, he could not bring to mind a case of fatal hemorrhage in his private practice but one, and that was in the wife of a medical man. He thought, therefore, the alarm which had been got up on the subject as to its frequency, at least in private practice, was unfounded. The President added that he had little doubt the judicious rules laid down for securing the contraction of the uterus by the late Dr. Joseph Clarke, and insisted upon by Dr. Collins, had much to do with the infrequency of *post-partum* hemorrhage, and if persisted in would lessen these cases. Be that as it may, it came to this, that whatever system was in practice to check hemorrhage in his time, must have been such that the risk was not so great as was now supposed, and that it must have been effectual in preventing hemorrhage. He hailed with pleasure every effort to add to our resources, but he apprehended the result of a rush upon this plan of treatment—a treatment, in his opinion, not unattended with risk, for if every man who met with a dash of hemorrhage resorted to the use of this styptic, to the neglect of the tried and hitherto successful modes of treatment, the consequences might be most deplorable. It has been stated by Dr. Ringland that out of forty-five cases brought before this Society, treated by perchloride of iron, eleven, or one-fourth, had terminated fatally. He had no hesitation in saying that that was a large proportion of fatalities in hemorrhage. What were the causes of hemorrhage after delivery? Imperfect and irregular contraction of the uterus, and morbid adhesions of the placenta to the uterus. The want of contraction was the main cause. In morbid adhesions there was an altered state of the parts that prevented its efficient contraction, at least where the diseased placental structure had adhered; and in the other case there was imperfect action. The object, then, was to cause the vessels to contract, and generally this was effected by grasping the uterus, following down its contraction by pressure, padding, and bandaging, and by not too rapidly extracting the placenta where this is still retained. In 99 out of 100 cases, this proceeding would be found effectual. But where the circular fibres contracted, and there was a chamber locked up above, how could any styptic applied prevent the hemorrhage. It was possible to account for the efficacy of the styptic where there were altered structures for morbid adhesions, or where there was anæmic inaction. The nature of each case would, perhaps, eventually determine the treatment. A great deal had been said as to the risk consequent on the introduction of the hand. He agreed with Dr. M'Clintock in thinking the practice not justifiable except the conclusion was arrived at that the hemorrhage could not be otherwise controlled. In such a case it was clearly justifiable, and there was no difficulty about it. He had been obliged in some instances to keep his hand on the uterus for 20 or even 40 minutes, and he believed if he had withdrawn his hand life would have been lost. If they had a case of hour-glass contraction to deal with before or after the expulsion of the placenta, the proper course was to introduce the hand, overcome the spasm of the circular fibres cautiously, thus dilate the contracted portion so as to admit of the contraction of the longitudinal fibres, and remove the clots when the uterus would contract, gradually closing upon the hand. When they came to decide between the use of the hand and an irritating stimulant thrown into the uterus, it should be recollected that the perchloride continued to act as an irritant whilst it remained in the womb. The hand, on the contrary, was withdrawn, and the irritant removed, after effecting the object for which it was introduced; and why should the hand, when used with caution, cause more injury than the head or breech of a fœtus—the natural stimulant inducing uterine contraction. He had not much experience of the perchloride in *post-partum* hemorrhage, but he had been repeatedly obliged to use it in other cases of uterine hemorrhage. He did not look upon it as an innocuous application, and he warned them of this, as he had traced more than two or three deaths as occurring even in minor operations after its use. He stated that distinctly. Taking into consideration the chance of pyæmia, he had no hesitation in saying that his experience went to prove that the use of this application to the interior of the uterus added to the risk in uterine operations, and that the fatality was increased in them by its use. He would not, therefore, have recourse to it unless it was urgently required, believing that other modes of treatment were safer, and, generally speaking, more effectual; but he admitted that cases might occur in which ordinary modes of treatment would prove unavailing, and in such cases he would grasp at the perchloride, and have no hesitation in using it as an additional or *dernier ressort.—Dublin Journal of Med. Science, May* 1874, *p.* 469.

[In all these discussions no reference is made to plugging. How is this?—Eds.]

99.—TREATMENT OF POST-PARTUM HEMORRHAGE.

By Dr. Blennerhassett Atthill, Waterbeck, Ecclefechan, N. B.

There exists one plan of treatment, for which I do not claim any novelty, but simply more importance than it at present enjoys. It is a plan for conducting the third part of labour—"all the circumstances which relate to the separation and expulsion of the placenta," according to Dr. Denman. It was my good fortune to become early impressed with this plan of treatment, which I am about to describe; and it is my firm conviction that by its means we can, with an amount of certainty otherwise unattainable, prevent the supervention of that most fearful phenomenon, "flooding." I have never had a case of flooding, although during the management of many varieties of labour, both natural and difficult, and obstetric operations, *post-partum* hemorrhage has threatened; and this I attribute solely to this way of conducting the removal of the secundines. The following is the plan I uniformly adopt. *Immediately* on the expulsion of the child—the binder of course being applied during the commencement of the second stage, and gradually tightened—I pass my hand (the left one), and grasp the uterus over the abdomen, and make firm pressure downwards in the axis of the pelvis. I then hook in my right index finger on to the edge of the placenta, which is invariably by this time in the vagina; and, with a gentle rotatory movement, extract. If, however, as is very seldom the case, the secundines be not low enough, I follow up the funis, and hook my finger at its insertion, and so effect its removal. I say, immediately the child is born I do this, because, if pressure be not directed at once to the uterus, the womb closes over the after-birth and prevents its speedy expulsion, and a proportionate amount of risk of *post-partum* hemorrhage is involved. I do not believe it right to teach that we should wait for a griping pain or two to effect the expulsion of the after-birth. These so-called griping pains should only cause the firmer contraction of the womb *after* the expulsion of the placenta. The advantages of this plan of treatment are the following. 1. We effect the speedy and safe removal of the placenta, and so place the uterus out of the danger of hemorrhage. 2. Should *post-partum* hemorrhage set in, we can have the uterus more immediately under our control. 3. It hinders the supervention of an unusual amount of vascular excitement. I submit these imperfect remarks to the notice of the profession, in the hope that they may evoke some larger experience. But I would feel like that deep thinker who, with more meaning than will disclose itself at once, said, "Already my opinion, my conviction, gains infinitely in strength and sureness, the moment a second mind has adopted it." I am sorry that I am unable to state from whose writings I gained this valuable piece of knowledge of the treatment of the third stage of labour and the prevention of flooding; but the subject was treated of in Braithwaite's *Retrospect of Medicine*. Dr. Churchill, in his fifth edition of the Theory and Practice of Midwifery, says: "I have adopted this practice for twenty years, and rarely have the placenta detained more than five minutes; nor have I had a case of hemorrhage during that time. If we wait some time before making pressure, the uterus closes over the after-birth, enough to retain, but not enough to expel it."—*Brit. Med. Jour., April* 18, 1874, *p.* 507.

100.—ON PUERPERAL PYÆMIA, ETC.

By Dr. J. Matthews Duncan, Physician to the Royal Maternity Hospital, and Lecturer on Midwifery in the School of Medicine, Edinburgh.

No theory of this subject can be regarded as final or sure. But the time has come when obstetricians should try to leave off the use of the convenient term puerperal fever, because it embodies error. There is nothing essentially puerperal known in it; nor is there anything of the nature of a fever, as that term is generally understood. A new name, already widely used, is to be found in the already comparatively old term, pyemia. This new name can be of only temporary utility, but that utility will be very great, and continue till advancing science displaces it by a better, as it should now displace puerperal or childbed fever. It will then have served its time by carrying the ideas of generations of practitioners away from the old, flimsy, and extensively erroneous speculations of the past to the more substantial of this day. It is not to be supposed that pyemia is a term to be analysed into its component parts and held as implying purulent blood. That was once the meaning of pyemia, but it is not so now. The crude pathology of Piorry is already almost forgotten, and his term pyemia is used extensively among the best pathologists as a comprehensive word, identical with or including the septicemia and ichorrhemia of certain others. It sounds like an adoption of humoralist views, but in it there is as much of solidism as of humoralism, and there is in it vastly more of modern science than in the term puerperal fever.

Pyemia occurs in several forms, which are characterized each by more or less peculiar symptoms, but most distinctly by the pathological appearances discovered post-mortem. There is that most widely known when you have septic embola, and scattered abscesses caused by them, and perhaps otherwise also. There is that where you have inflammation of the peritoneum and other serous cavities, including the synovial and endocardial. There is that where the mucous membranes are chiefly affected—the muco-enteritic. And, lastly, there is that where the only results found after death are—alteration of the blood, enlargement of the spleen, the liver, and degenerations of their most important tissues, with similar degenerations in other organs. It is this last which, often rapidly fatal, was described by Helm, and is now often called acute septicemia. These are the cases which the superficial pathology of our young days described as having no post-mortem appearances at all. An autopsy in those days was made by any practitioner, occupied only a few minutes, and the observations made were of corresponding value. Now an autopsy is a matter understood to demand the labour for a long time, often for hours or even days, of an expert. On these fruitless necropsies, where no appearances were discovered and none supposed to be discoverable, was founded, as you will remember, an argument supposed to be of clenching potency in favour of the essential fever character of the disease. But I confess I have never been able to discover either the logic or the power of the demonstration.

Many researches of different kinds have contributed, and are contributing, to converge scientific light on this greatest of practical, obstetrical subjects; but scarcely one of them can be regarded as being even yet completed, while some are only well begun. In drawing a conclusion, it will be well to take a glance at these various investigations, with which we may class some more general discussions, such as that of Spiegelberg, on this topic.

Van Swieten, Willis, and many old authors on puerperal fever, regarded it as a wound-fever, and Eisenmann's well known work on the subject, published in 1837, is called "Wound-Fever and Childbed-Fever." The wound which these, and even most recent authors, have in view, is that produced by the separation of the placenta; but it is now well known, and has been often found clinically exemplified, that the disease may begin in a contusion or laceration of any part of the genital canal. Many of you have recognized the beginning of a fatal disease in a diphtheritic state of a slight recent perineal laceration, with surrounding redness and boggy swelling. I have already alluded to the recent advances of our knowledge of the anatomy of the placental wound, but already we know where to look for much more light on this subject. The anatomy of the lymphatics, to which recently Recklinghausen, Klein, Thin, and many others have contributed, is not yet completed for the uterus. We all know the fine-looking and distinct, but very unsatisfactory drawings of uterine lymphatics by Moreau; but we do not yet really know their actual anatomy, though very much progress has been made by the anatomical investigations of Lindgren, Fridolin, and especially of Leopold. The completion of this work will be an addition to the theory of puerperal pyemia.

Following the as yet indefinite notions of a wound-fever, came a further true advance from Boyer, Legallois, Cruveilhier, Tonellè, Dugès, and Simpson, who combined to demonstrate the identity of what would now be called the rough morbid anatomy of patients dying after surgical and after obstetrical wounds.

Then came a grand piece of progress, consisting in the discovery and descriptions of phlebitis and lymphangitis, which we owe to Dance, Duplay, Cruveilhier, Robert Lee, Hecker, and Buhl.

We now reach our own times, and have a still grander progress of our knowledge to record, in the discovery of thrombosis and embolism by Virchow, Kirkes, Cohnheim, Buhl, and many others.

After these come researches whose bearings on this subject are certainly very important, but which are, in many respects, as yet immature and incomplete. We allude to the investigations as to the potency of septic poisons, connected with the names of Davain, Panum, Kehrer, Thin, and many others; the great and actively progressing researches as to the production, diffusion, and influence of bacteria of various kinds, by Lister, Klebs, Waldeyer, Sanderson, Billroth, Winge, Heiberg, Orth, and many others; the new researches of Sanderson on the infective product of all acute suppurative inflammations; researches also into the distinctive characters of the noxious or septic, and the innocuous bacteria.

Besides all these, many valuable results have been elicited from the analysis of experience in hospital and in private practice. In this way the influence of age has been ascertained, and especially of immaturity and of advanced life; so also the baneful influence of primiparity and of excessive childbearing, and of twin-bearing; so also the baneful influence of severe and of complicated labour; so also the bearings of the duration of labour; so also the influence of earliness or lateness of attack after delivery; so also the baneful influence of inclemency of season; so also the dangers attending hospitals and the dangers of communications between the sick and the healthy.

But all of these researches, whether finished or still imperfect, do not, when combined, complete our modern view of this great subject. It is a subject in practical medicine, and we are practitioners. The great object of our work is to prevent or to remove the disease in our patients, and we have to inquire what fruits our knowledge produces for the comfort or healing of the sick.

Many remedies for puerperal pyemia have been proposed, and their successful application loudly proclaimed and widely believed. Doulcet was even rewarded by the French Government for the discovery of the curability of this disease by ipecacuanha. In our own day new cures do not fail to make their appearance, and the advanced knowledge of our times would lead us to expect that they should be more rational, as the phrase is. But who is there of weight in the profession now, who believes in any cure or in any system of specific treatment? All have been found wanting. Yet the wise physician of this formidable disease does not despair of guiding his patient through it, although he well knows its very dangerous character. Experience has shown him the utility of several means for relieving sufferings; and the favourable progress of a case may be encouraged, though not secured, by those invaluable directions which he may give as to diet and stimulants, as well as to more direct medicinal treatment of the genital passage, of the skin, of the bowels, and of the system generally.

But in this disease the physician has long been saying, not that prevention is better than cure, but that prophylaxis or prevention is to be chiefly looked after, and not cure. Great credit is due to Semmelweiss for the good he has done, especially to hospital patients, by his enlightened zeal in this cause; but the records of hospital practice sufficiently show that much more has yet to be accomplished. Prophylaxis is still farther to be carried out by attention to stop injurious communication between the sick and healthy, by disinfection, and by architectural arrangement, subjects which are all at present receiving much attention from the profession.

In the course of my remarks I have repeatedly referred to scientific researches, as to the poison producing pyemia, and as to the effects of its concentration, and as to the connexion of this poison with the presence and diffusion of bacteria. These researches have been carried on mostly by observations and experiments on the lower animals, and of their very great value there can be but one opinion. But there is a variety of circumstances which seems to indicate that the lower animals are not subject to exactly the same laws in these matters as man is, and certainly there must be great caution exercised in arguing in human pathology from the analogy of the lower animals. The most important of the researches referred to, however—those of Lister and his followers—have been mainly carried out in man, and consist, in a great degree, in the attainment of results in practice equally wonderful and valuable—results that can, so far as we at present know, be attained in no other way. These results go far to justify the belief that pyemia is a septic disease, and that puerperal pyemia may be almost, if not altogether, prevented by the application to delivery or a practice based on antiseptic principles. We know how much has already been, and is, I am happy to say, daily done with success in this direction. But the rules of Semmelweiss, or any other washing of the hands, however carefully conducted, do not constitute treatment according to the manner of Lister. Such imperfect antiseptic precautions, by use of antiseptic gauze and otherwise, I have used with apparent advantage; but we have yet a long way to go, in order to secure complete antiseptic delivery and subsequent treatment. To reach this desirable object, the efforts of several good minds are, I know, directed, both at home and abroad; and some recent unpublished cases of successful antiseptic treatment of wounds of the penis, where periodical discharges of urine have to be permitted, supply a sketch in miniature of plans that might be applied to ordinary confinements. To say more about them I have no right; but I conclude by calling upon you to give your best aid to forward the grand cause of the increased safety of lying-in women.—*Obstetrical Journal*, *Sept.* 1874, *p.* 349.

101.—ON PUERPERAL CONVULSIONS.

By Dr. T. More Madden, Dublin.

There are few obstetric questions, he observed, of greater interest than the etiology, prevention, and treatment of puerperal convulsions. Some advance has been recently made in the prophylaxis and management of this disease, but its causes still remain *sub judice*. Therefore, before relating to the society the history of the cases of puerperal eclampsia which had come under his notice in hospital and private practice, he would first make some general observations on the nature and treatment of this complication of labour, and also briefly refer to the principal theories which had at different periods been applied to the explanation of its causation.

The relative frequency, as well as the danger of convulsions, was shown by a table prepared from the reports of the hospital with which the author had been formerly connected, by which it appeared that out of 50,928 delivered, there were only 138 cases of convulsions. Of these 109 occurred in primipara; 89 of the patients recovered, and 36 died. Of the children 70 were alive and 51 still-born; 57 were delivered by the natural efforts, 39 by the forceps, 20 by craniotomy, 3 by version, and one by the vectis.

Dr. More Madden then gave a short summary of the various opinions as to the etiology of the disease, and traced back to the theory, formulated by several recent writers, that these convulsions are reflex actions excited by cerebro-spinal or medullary irritation of uterine origin, to Laurence Joubert, Professor of Medicine in the University of Montpellier in the middle of the sixteenth century.

Reflex actions are now generally referred to the medulla oblongata, and modern physiological researches have confirmed the opinions of the older authors in assigning the upper part of the spinal cord, the medulla oblongata, and pons variolii as the probable starting point of the convulsive action in these cases. In proof of the influence of physical impressions on the medulla oblongata in producing convulsive action, Dr. More Madden referred to two cases of acephalous fœtuses which came under his observation some years ago in the Lying-in Hospital: one lived for twenty minutes, the other for an hour and a half after birth, and in both it was remarked that the slightest pressure on the bulbous expansion of medulla oblongata, which supplied the place of the brain, produced violent general convulsions.

A considerable number of authorities were quoted to show that the older British obstetricians, with few exceptions, held that puerperal convulsions were occasioned by determination of blood to the head, and should be treated by blood-letting. It was admitted that pregnancy must be regarded as a predisposing cause of cerebro-spinal congestion, the blood being then increased in quantity as well as containing more fibrine than usual. As gestation progresses the enlargement of the uterus increases the tension of the cerebral vessels, which attains its maximum during the violent efforts of parturition, when puerperal convulsions most frequently commence.

The circumstance of the disease generally beginning at night was also relied on by some as a proof that these convulsions are connected with congestion of the brain. That circumstance, however, did not appear to Dr. More Madden to support that opinion, for, as he had some years previously endeavoured to prove (in a memoir "On Dreaming considered in Relation to the Study of Insanity"), during sleep the brain is in a comparatively anæmic condition, and the blood in the encephalic vessels is not only diminished in quantity, but moves with diminished rapidity.

Convulsions are not confined to plethoric patients, and it was proved that anæmia, whether resulting from the sudden loss of blood by hemorrhage or the gradual deterioration of the vital fluid by disease, is conducive to eclampsia. Nor, continued the author, is pregnancy, even when apparently accompanied by general plethora, actually so in most cases. On the contrary, the blood, though increased in quantity, is then more generally impoverished, containing fewer corpuscles, less albumen, and a larger proportion of water, by which the circulation is more and more embarrassed as the uterus enlarges. This vascular tension occasionally results in serous effusions into the areolar tissue, by which a considerable drain of the nutritive elements of the blood is produced.

The writer then referred to the history of the successive experiments by which it had been shown that the convulsions of pregnancy were frequently associated with dropsy, marked by albuminuria, and attended by the diminished excretion of urea, and the consequent retention of the compounds in the system.

Dr. More Madden, however, dwelt upon the fact that urine is by no means invariably albuminous in these cases. Thus, out of six instances of convulsions during labour, in which he had examined the urine, in only four was albumen discovered, and, on the other hand, he had found albuminuria in pregnant women who had no subsequent attack of eclampsia. In two cases of sthenic puerperal convulsions he had had an opportunity of testing the blood for urea, but in neither was any appreciable amount of this salt detected on a microscopic examination of the evaporated serum treated in the ordinary manner with nitric acid. Either urea or carbonate of ammonia, resulting from its decomposition, are frequently present, however, to an abnormal extent in such cases; though both these salts may be injected into the blood of a healthy animal without producing convulsions.

From this summary of the most important opinions which had hitherto prevailed as to the etiology of this disease, read by the light of his own clinical observation, Dr. More Madden drew the conclusion that in the causation of puerperal convulsions a variety of circumstances had a share, and must be taken into equal account. In the first place, the disease was obviously connected not only with the state of the uterus itself and with that of the adjoining organs during gestation, but still more so with the remarkable condition of nervous susceptibility peculiar to pregnancy. At this time the pressure of the gravid uterus on the renal emulgent veins must interfere to some extent at least with the functions of the kidneys, as well as act as a cause of cerebro-spinal congestion. And hence in the cases under consideration these cerebro-spinal nervous centres are usually more or less congested, even in those instances in which the patient's general condition is anæmic, and, moreover, are irritated by the circulation of vitiated blood containing some non-eliminated *materies morbi* through the vessels producing a direct toxic effect on the grey excito-motor nerve substance of the brain and medulla oblongata, and stimulating the hyperæsthetic condition just referred to till the latent excitability becomes so intense that it needs only the addition of the uterine irritation such as the first pain of labour to cause the pent-up nerve force to burst into uncontrollable action and produce the violent reflex muscular spasms that constitute puerperal convulsions.

It was a remarkable fact that puerperal convulsions generally attack a number of individuals about the same time; thus, of the eight cases which he was about to detail no less than three occurred within a fortnight. It was not improbable, as was long since conjectured by Smellie and by Denman, that the explanation of this circumstance will be found in the occurrence of some peculiar electrical condition of the atmosphere at the time these manifestations of disordered nerve force are most rife.

In almost every instance of this disease that had come under Dr. More Madden's notice the presentation was natural.

Whenever eclampsia occurred towards the end of pregnancy labour was generally produced by the disease. Mental anxiety, especially the combination of shame and despondency peculiar to unmarried women in labour, was clearly the exciting cause of the disease in very many of these cases.

The ordinary classification of puerperal convulsions into hysterical, epileptiform, and apoplectiform was regarded by Dr. More Madden as misleading and unsatisfactory. The disease under consideration was essentially distinct from either epilepsy or apoplexy, being a convulsive affection *sui generis* peculiar to women who are either pregnant or soon after parturition. The hysterical form of puerperal convulsions is but an attack of hysteria occurring in the early months of gestation, though possibly excited by reflex uterine irritation. The so-called epileptiform and apoplectiform puerperal convulsions are identical in their origin and nature, approaching each other in widely varying degrees in different cases, and influenced in their symptoms by the severity of the attack and the constitutional state of the patient rather than by any essential difference in the nature of the disease. In the majority of instances puerperal convulsions are preceded by œdema of the upper extremities, face and eyelids, pain in the lumbar region, and albuminuria. For some days before the attack the patient generally complains of *malaise*, followed by headache, giddiness, confusion of thought, or peculiar irritability of temper, similar to that which is occasioned by the circulation of lithic acid in the blood and which precedes an attack of gout.

The symptoms of puerperal convulsions in their first stage generally resemble those of an ordinary epileptic fit. Commencing with twitching of the muscles of the face and eyes, the convulsions soon extend to every part of the body, though generally more marked on one side than on the other, recurring at irregular intervals in clonic spasms of increasing violence and duration. In anæmic patients throughout the attack the face may be cool and pale, the eyes glistening, and the pupil contracted. In the majority of cases the patient's state during the commencement of the attack is that of vascular depression rather than of vascular excitement, the extremities being cold, the countenance pallid, and the pulse, though quick, weak and compressible. But generally, as the convulsions recur more frequently, the impeded respiration and consequent non-aeration of the blood induces symptoms of venous congestion. The face becomes dusky and livid, the lips and alæ nasi turgid, the breathing hissing, or stertorous, the pulse full and labouring, and thus the disease passes from the first into the second stage, or from the so-called epileptiform into the so-called apoplectiform convulsions.

In plethoric women the disease generally presents *ab initio* the apoplectiform character, and may commence by a sudden violent convulsion, after which the patient falls into a comatose state, in which she lies, as well described, "like a person dead drunk," the convulsions meanwhile recurring at irregular intervals. Her face is congested, the carotids and temporal arteries throb visibly, the respiration becomes stertorous, the pulse slow and full, the limbs placid, and no reflex action responds to any external stimulation. After remaining for an uncertain time in this condition—midway between life and death—under favourable circumstances the convulsions may cease, and the patient at last slowly regains consciousness, and awakes once more to renewed vitality, though her mental powers will probably remain clouded for some days. But, on the other hand, the coma may become more profound, the pulse slower and more labouring, the respiration more embarrassed, the face more pallid, the extremities colder, and the skin covered with a clammy moisture, until at length "the last sad scene of all" is closed by a violent and final convulsion.

In all cases prevention is better than cure, and hence the importance of a general recognition of the premonitory symptoms, as by timely prophylactic measures we may sometimes succeed in warding off impending convulsions.

In this prophylactic treatment our objects are—first, to relieve the kidney; secondly, to assist the efforts of Nature to purify the blood after secretions; and, thirdly, to soothe the nervous irritability peculiar to these cases. The first object may be attempted by cupping and fomentations over the loins, the free use of diluents, and the cautious administration of mild diuretics, and especially by colchicum in small and guarded doses; the second intention may be fulfilled by saline aperients, as well as by diaphoretics, if the skin be harsh and dry; and the third by sedatives, especially bromide of potash and belladonna. During the convulsions the ordinary precautions should in the first instance be taken to prevent her injuring herself in any way during the fit.—*Medical Press and Circular, June* 3, 1874, *p.* 466.

102.—FIBROUS TUMOUR OF THE ANTERIOR LIP OF THE UTERUS —REMOVAL BY THE GALVANIC KNIFE.

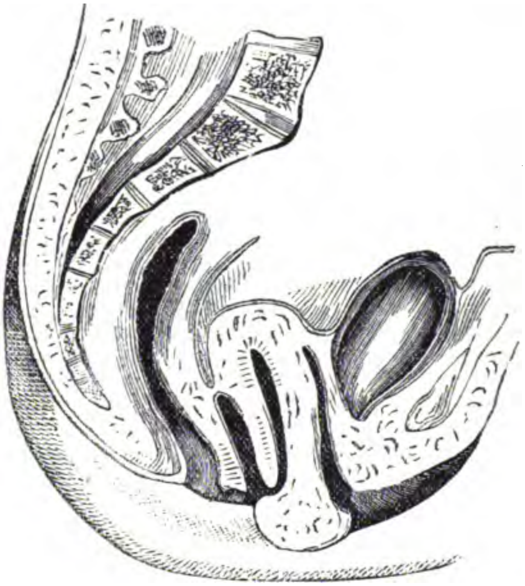
Case under the care of Dr. ATTHILL, Adelaide Hospital, Dublin.

A. M., a servant, unmarried, æt. 81, was admitted on the 17th July, 1873. She stated that for some months previous she was conscious of a sense of weight and fulness in the vagina, in all other respects being perfectly well; that more recently, while carrying a heavy weight, she "felt something inside give way," from which time her discomfort increased, till finally, about six weeks prior to admission, she discovered, after a hard day's work, a tumour protruding from the vagina. This receded when she lay down, but always reappeared when she stood up or walked about. Menstruation continued to be perfectly normal.

On examination, an ovoid tumour, of the size of a hen's egg, was seen to project from the vagina, its long diameter being parallel with the vulva. In appearance this tumour strongly resembled the unimpregnated uterus, the resemblance being increased by the fact that an orifice, which proved to be the os uteri, could be seen on the upper part of its posterior extremity. Indeed, so great was the resemblance, that at first sight I believed the case to be an example of that very rare affection, complete prolapse of the virgin uterus. The use of the sound, however, proved that idea to be erroneous. It passed upwards, and rather backwards, to the depth of 2¾ inches, thus proving that the uterus, though drawn down, was still in the pelvis and but little increased in size. The tumour consisted of the anterior lip of the uterus, which was elongated and thickened; the uterus itself being drawn down by the weight of the tumour till it rested on the perineum, the os uteri being at the vulva. The condition of the parts is correctly represented in the annexed woodcut.

The diagnosis of a fibrous tumour embedded in the anterior lip of the uterus having been made, I determined to amputate the elongated portion of the cervix, electing to do so by means of the galvanic knife, hoping by that method to lessen the risk of hemorrhage, which the thickened and hypertrophied condition of the part led me to think would be likely to occur—an opinion which the event verified. Mr. Perssé White kindly assisted me at the operation. The apparatus employed was Grenet's. The galvanic knife consisted of a loop of platinum wire about half an inch in length, connected by means of the ordinary wire conductors with the battery.

The cervix measured at the point selected for amputation, 3½ inches in circumference. The great thickness of the tissue to be divided, and its extreme denseness, rendered the operation very tedious; it occupied in all thirty-five minutes. The slow progress made in dividing the tissues was also in no small degree due to the vascularity of the part, the flow of blood on each stroke of the knife being so considerable as to cool the platinum wire to such a degree, that ten or fifteen seconds frequently elapsed before the knife was hot enough to be again used. The cauterization was, however, sufficient to prevent any serious hemorrhage occurring; still two arteries had to be ligatured. Excepting what occurred from these two vessels, the cauterization effected by the knife was sufficient to check the hemorrhage, nor was there any subsequent loss of blood. The stump of the cervix cicatrized very slowly, and did not heal perfectly for more than two months. As it healed, the divided surface seemed to be drawn within the cervix, giving me the impression that the tumour had originally projected inwards, and that, as it descended, the muscular fibres of the inner half of the cervix uteri had elongated in a greater degree than those of the outer portion. When discharged from Hospital the uterus seemed to be globular, the cervix being apparently altogether wanting, and this not only as regards the anterior lip, in which the tumour had been seated, but also with respect to the posterior one, which had been in no way implicated. The operation itself was perfectly successful, but the great length of time which it occupied more than counterbalanced the advantage obtained in lessening the risk of hemorrhage. The smell, too, caused by the slow cauterization of the parts, was most disagreeable. As to the amount of pain caused by the galvanic knife as compared with that produced by the écraseur, the patient being under the influence of chloroform, no opinion could be formed.



On subsequent examination, the amputated lip was found to contain a perfect fibrous tumour enclosed in its capsule.

Probably in a similar case, a galvanic cautery formed by a band of platinum encircling the part to be removed, and tightened by means of a screw, as practised in similar cases in America, would prove more satisfactory.—*Irish Hospital Gazette, Jan.* 15, 1874, *p.* 28.

103.—INTRA-UTERINE STEM PESSARIES.

By Dr. CLEMENT GODSON, Physician to the Samaritan Free Hospital for Women and Children.

It is not my purpose to discuss the merits of intra-uterine stems in gynecological practice, but to describe a new form of stem which I have lately had manufactured for me by Messrs. Arnold and Sons, which I have found very serviceable, and I believe to possess some advantages over other stems in use.

The chief points of recommendation are these: excessive lightness, and a special means of being retained *in situ, which may or may not be employed.*

It is obvious that the less weight there be in the stem, the less likely is it to fall out, or to drag upon the uterus, and therefore the more comfortably may it be worn.

The stems are composed entirely of aluminium, and are so light that if placed on the palm of the hand at some distance from the mouth, they can with very little effort be blown off it.

They are manufactured in five sizes, Nos. 4, 5, 6, 7, and 8; the respective weights of which are 17, 19, 25, 28, and 30 grains. In comparison with the silver stems hitherto employed they are about half the weight. The *largest* aluminium stem, No. 8, is three grains lighter than the *smallest* silver stem in ordinary use, No. 4, which weighs 33 grains, while the largest No. 8 silver weighs 56 grains.

I find, and I attribute it to this property of lightness, that the aluminium stems have as a rule no tendency to get displaced. But in some cases this old trouble arises; to obviate which, I have contrived a spring which can be subsequently inserted; it has simply to be pushed up the canal of the stem, when it springs through the perforation and expands into the cavity of the uterus, thus fixing itself. I advise this spring to be applied only when the simple stem has been tried and failed. There is a certain amount of objection in my mind to anything which projects against the uterine wall. I have been obliged to desist from using the flexible india-rubber stems, because of the hemorrhage occurring and obstinately continuing after their introduction, which has subsided immediately after their removal, and this I believe to be caused by the points, which play against the uterine walls, keeping up incessant irritation. In nearly every case too of anteflexion which I have treated with the flexible stem, I have found, while *it* has been in place, the uterine body was as plainly to be felt anteriorly as before its introduction. This of course cannot be the case so long as the aluminium stem remains *in situ.—Obstetrical Journal, Aug.* 1874, *p.* 286.

104.—ON THE DIAGNOSIS OF OVARIAN DROPSY.

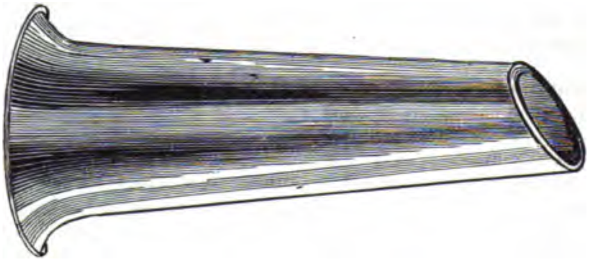
[The following is the portion of a review of Mr. Spencer Wells's and Dr. Peaslee's recent editions of their works on ovarian dropsy treating of the diagnosis.]

Mr. Wells describes with the hand of a master, and with the clearness of one who has himself worked it out, the means of distinguishing between ovarian dropsy and each of the foregoing conditions. He does not hesitate to tell of the cases in which he has failed to make the diagnosis. On the contrary, he records them fully and minutely, and thus lays the foundation for future success. All the senses must be used in obscure cases. Inspection, palpation, percussion, and auscultation, aided by mensuration, must all be used. By the uterine sound much can be learned, as well as by vaginal and rectal digital examination; but, of all these, palpation and percussion afford the most valuable information. By passing the hand over the abdomen, the presence of a tumour is ascertained, also whether it is solid or fluid, or partly the one and partly the other; whether it is movable or immovable, smooth and regular in its outline, or the reverse; but, by percussion, it must mainly be decided whether the swelling is the result of ascites or of ovarian disease, or caused by tympanites, or by a phantom tumour. In ascites, the stomach and intestines, containing air, float on the surface of the fluid, and, therefore, the highest points of the tumour, the patient lying on her back, give out a clear sound on percussion. If, however, the fluid be contained in a cyst, the stomach and intestines are pushed aside, as the tumour rises in the abdomen, and lie in the epigastric and two lumbar regions. Hence, the highest points variably increased before, during, and after the catamenia. By tactile examination, this tenderness may easily be demonstrated to be ovarian, and in very many cases the ovaries may be found to be enlarged and tender by the bimanual method of examination. Sometimes examination by the rectum permits a better investigation, especially if the patient be anæsthetised. As a rule, there is not much menstrual pain; for the uterus, sympathising in the disturbance, is often enlarged, and the discharge comes away almost painlessly.

The treatment should consist mainly of organic and systemic rest as perfect as possible during the menstrual periods, and the administration of ergot. Between times, counterirritation may be used with advantage, and the best form of that I have found to be painting a circumscribed spot of skin in the inguinal regions, about two and a half inches in diameter, with linimentum iodi every morning as long as the skin will bear it. When the spot has become too painful to allow a repetition of the painting, the cuticle is allowed to peel off and the skin to become firm, and then the process is repeated as often as may be found necessary. I have had patients going on with this for months, and it nearly always does them good. Further, I give bromide of potassium internally, sometines combined with ergot. I have also found arsenic and cod-liver oil very useful, and one case yielded to large doses of quinine when everything else had failed.—*British Medical Journal, June* 6, 1874, *p.* 784.

106.—TAPERING METALLIC TUBULAR SPECULUM.

This speculum has been manufactured by Messrs. Arnold and Sons, 35 and 36, West Smithfield, in accordance with suggestions made by Dr. J. Hall Davis. The advantages which this instrument presents over Ferguson's glass silvered speculum are its non-fragility and its tapering form. It is easier of introduction, and the reflective and illuminating power is greatly increased; the opening being much wider, there is considerably more room for operations. The speculum has a trumpet-shaped external opening, the width of the instrument gradually diminishing from this to its smaller uterine aperture. The tube is suitably bevelled off at its uterine end, and the edges carefully rounded. It is made in three sizes, and produced in two combinations of metals—one electro silver-plated and gilt at uterine end, and the other nickel silver-plated, which resists the action of acids, and will not tarnish. They are considerably lighter and cheaper than any metal speculum hitherto introduced.—*Medical Times and Gazette.*



SYNOPSIS.

(ARRANGED ALPHABETICALLY), CONTAINING

A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THIS VOLUME, SHOWING AT A GLANCE THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE HALF-YEAR.

AFFECTIONS OF THE SYSTEM GENERALLY.

ACUTE RHEUMATISM.—*Immovable Bandages.*—Favourable results are obtained in acute rheumatism, as regards the pain, the fever, and the duration of the disease, by fixing the parts immovably, and so maintaining them not only until all pain and swelling have left the joint, but until the constitutional symptoms have disappeared, and especially until the temperature has returned to the normal standard. This may be effected by means of pasteboard, or for small children and restless patients by plaster of Paris. (Dr. Oehme, p. 87.)

LUMBAGO.—*Guarana.*—Fifteen grains of guarana in hot water, with a little cream and sugar, is a remedy worth trying in cases of lumbago. If necessary forty grains may be taken regularly once a day. The results vary according to the nature of the case. I have come to the following conclusion, viz., that whenever the fibrous envelopes of nerves, the aponeurotic sheath of muscles, the fasciæ or tendons are the parts affected, guarana gives if not instantaneous, at least very immediate relief, which will last from twelve to twenty-four hours; and I confidently expect that perseverance in the use of the drug, gradually increasing the dose up to 40 grs., will entirely remove any of the above-mentioned kinds of rheumatism. Of the good effects of guarana on nervous hemicrania there is no doubt; and I trust it will prove, in other hands, as valuable against rheumatism as it has in mine. (Dr. E. A. Rawson, p. 87.)

TYPHOID FEVER.—The so-called pythogenic theory cannot in the majority of cases be for a moment entertained. We are all acquainted with places constantly saturated with evil odours of all kinds, including not unfrequently that of decomposing fæcal matter, and yet there is no fever. Horrible though it may seem, these matters make their way into drinking water, and yet no typhoid fever follows. To excite an outbreak of typhoid something more is necessary, and the question is—What is this something? Without doubt it has been shown by the researches of Drs. Budd, Ballard, and many others that the special exciting cause is typhoid excreta; and if so in a certain number of instances, there is a strong probability that it is so in all. In the typhoid stools undoubtedly are to be found the germs which propagate typhoid in a certain number of instances; and if putrid animal matter will not alone generate typhoid, it certainly constitutes a nidus, in which these germs thrive and apparently retain their vitality for a long period of time. The nature of these germs is unknown to us, but inasmuch as they retain their power of self-propagation, they must consist of particles more or less minute of living matter. (Editor of Medical Times and Gazette, p. 21.)

Several interesting facts are related, showing that the exclusive contagion theory of the origin of typhoid is untenable. Any decomposing or putrid animal matter, especially when dissolved or suspended in water, may produce the disease when taken into the stomach, as drinking water; or if exhaling into the atmosphere, by entering the lungs. (Dr. W. Strange, p. 27.)

The author, after relating a case of typhoid, considers the following conclusions proved:—That the constant exposure to sewage emanations appears to protect the system in some degree against the effects of typhoid virus. That, in some instances, individuals after a change of residence from a healthy locality to one favourable to typhoid fever are more susceptible to the poison than those long resident in it. That the sewage emanations in this place were no doubt the cause of this attack, and that the stage of incubation was from fifteen to twenty days. That sewage emanations are sufficient to create and produce typhoid fever, though not contaminated with the discharge of typhoid patients. (Dr. A. Mackintosh, p. 30.)

The Eruption of Typhoid Fever.—One of the most characteristic features of typhoid is the eruption which generally appears upon the skin. The spots are of a pale rose colour, and fade on pressure. In size they vary from half a millet seed to less than that of a split pea. They are rounded though not distinctly marginated, are flattened on the surface, and give no feeling of hardness or resistance to the finger passed over them. They are not always present, but are generally so, and appear in crops of from three to six at a time, each spot remaining out for three or four days. (Dr. T. B. Peacock, p. 17.)

Treatment.—The poison of typhoid fever is almost certainly mainly propagated in the alimentary canal, and is therefore, much more than ordinary animal poisons, within the reach of medicaments. Experience has known that certain substances, like green sulphate of copper, creasote, and carbolic acid, Condy's fluid, &c., have the power of destroying the germs of the disorder outside the body. Why should they not be used inwardly? To this the reply is, that there is no particular reason why they should not in moderate quantity: but experience is wanting as to their efficacy in arresting the production of fever germs, or in destroying those already formed. Another suggestion, however, occurs; it is well known that the pea-soupy stools of confirmed typhoid are invariably alkaline, and it is a question how far the germs which these contain can exist in presence of a strong acid. Moreover, experience declares itself on the side of giving acids in the disease, since they tend to remove the clammy condition of tongue which adds so greatly to the sensation of thirst, and to prevent severe diarrhœa. For these latter reasons alone we should be justified *nihil contradicente* to order dilute or aromatic sulphuric acid, or dilute hydrochloric or nitro-hydrochloric acid in ordinary doses from time to time, having a hope that the same remedies might tend to limit the spread of the disease by limiting the growth and number of the typhoid germs. Having, however, no assured means of cutting the malady short, we are obliged to confine ourselves to treating the complications of the disease. Foremost among these is excessive temperature. It seems to us that temperatures under 104° Fahr. may as a rule be dealt with by increasing the quantity of alcohol given to the patient, by tepid sponging of the surface, and especially by the giving of quinine. As to the administration of alcohol, we hardly think it possible to lay down rules to be generally available. Sponging is simpler, and is available at anything over 100° Fahr. But to give quinine effectually it must be given in full dose; as a rule we begin with twenty grains, and continue for some time thereafter to give five grains every four hours. This, no doubt, gives some headache and buzzing in the ears, but that is only showing that the remedy is having the physiological effect which is essential to the due development of its power of depressing temperature. With these three remedies in our hands, not every case of typhoid requires cold baths; but if the temperature keeps rising, and remains persistently over 104° Fahr., then the bath should be brought to the bedside, carefully raised to the temperature of 70° Fahr., and the patient placed in it for ten minutes. This will cool the surface, but will have, in the first instance, little effect on the internal temperature, for causes on which we cannot now enter. After the patient has been replaced in bed, however, the internal heat also falls, but too often only for a time, insomuch that in bad cases the baths may require to be repeated every two hours, and as many as 200 to be given in the course of the disease. Thus used there can be no question of the exceedingly great usefulness of cold water baths; the only diversity of opinion seems to be as to the proper time, as indicated by the patient's temperature, when to begin them. But even beyond this there are exceptions to ordinary rules. The effect of the cold water is to arrest or diminish cutaneous circulation, and consequently to produce some degree of internal congestion. If, therefore, there be threatening of intestinal perforation, when the necessary moving of the body might be dangerous, or of intestinal bleeding, when the congestion might give rise to troublesome hemorrhage, the cold water cannot well be employed in this fashion; but it is not to be forgotten that the pulmonary congestion, so apt to be a dangerous concomitant of typhoid, is relieved rather than otherwise by the use of the bath. (Editor of Medical Times and Gazette, p. 28.)

. *Cold Baths.*—It is necessary to combat the excess of temperature during the whole course of the disease; that is to say, *to prevent exacerbations and maintain remissions.* The first point in the treatment lies in its employment from the outset of the disease, for it is certain that refrigeration is more efficacious in preventing impending lesions than in curing them when the high temperature has produced a dissolution of the blood, or involved important organs. The phrase "from the outset" is to be understood as referring to the moment when the diagnosis of enteric fever is certain; or as soon as the physician is called. Precious time should not be lost in using drugs, and only resorting to cold baths when the case appears urgent. Further, there is no harm in treating by this method febrile states that have an analogy to enteric; their evolution, in fact, is more rapid under this treatment than by the use of medicines. There is no means of knowing that a mild case of enteric fever may not suddenly assume a most serious aspect. It is then, too late. The following is a description of Brand's method of using the cold bath. He prefers the plunge bath, which is the most suitable, its action not depending on the zeal of the nurse. The water should be at the same temperature throughout, and it should not be a tepid bath gradually cooled, the shock in the former case being regarded as beneficial. The instructions to the nurse are as follows:—The nurse will, every three hours, take the rectal temperature of the patient, and give him a bath at 20° C., of 15 minutes' duration, night and day, until the thermometer placed in the rectum for five minutes does not register 38·5° C. The patient is taken to the bath, his night dress removed, and he is plunged *up to the neck* in the water, at 20° C., while the head is sprayed with water at 6° to 8°—an important detail, especially where the patient presents cerebral symptoms. After the nervous symptoms have been allayed, the spray may be given at the same temperature as the bath. That affusion having lasted one or two minutes, the nurse rubs the limbs of the patient for three or four minutes; then he is left at rest. His breathing may become difficult, and his teeth may chatter, but he must remain in the bath for 15 minutes. When he is about to be removed from the bath the affusion is to be repeated. He should be kept at least 15 minutes in the bath, even should the shivering set in from the commencement; and longer should the shivering be late of appearing. He is then removed, his night dress put on, without drying him, a sheet is thrown over his feet; his mattress should be hard enough not to yield to the weight of the body, which should be covered by a sheet in summer (also by a light linen cover in winter). A little weak tepid soup is now administered, along with a mouthful of old wine, and he is left alone to rally from his shivering, which lasts 15 to 20 minutes, sometimes for even an hour. Fluid nourishment should be given regularly, and always tepid—mouthfuls of iced water should be taken from time to time. If the patient is very weak, a spoonful of old wine may be administered before the bath. (M. F. Glénard, p. 24.)

TYPHUS FEVER.—*The Eruption.*—The eruption usually appears as small discrete spots, slightly elevated, of a dingy red colour and fading on pressure. In a short time the spots cease to be elevated, and fade less completely on pressure, and a purple mottling appears in the interjacent portions of skin. At a still later period—say on the eighth, ninth or tenth day, the spots become entirely petechial, not being at all affected by pressure. Sometimes the eruption which first appears is more discrete and more decidedly elevated, so as to bear for the time a close resemblance to the typhoid rash, but when the general mottling appears there can be no difficulty in recognising the nature of the eruption. (Dr. T. B. Peacock, p. 31.)

AFFECTIONS OF THE NERVOUS SYSTEM.

Chorea.—I have found Jaccoud's plan extraordinarily successful in several cases; it consists of spraying the skin over the whole length of the spine with ether twice daily. This, along with arsenic internally, have given me solid results, such as have been obtained by no other remedy. Cod-liver oil and iron, however, are very useful in debilitated subjects. I have a complete distrust in chloral, and zinc I have found a very unreliable remedy. In the milder and more chronic type of chorea, where the nervous system is not too much disorganized and protracted, the shower bath is well worthy of being called a sheet anchor. It gives that preliminary bracing to the nervous and moral tone, without which we may fail to get a leverage for other treatment. (Dr. F. E. Anstie, p. 62.)

Electricity for Relief of Pain.—Electricity will often cure pain and much more often will alleviate it; and as an alleviator of pain it is not open, if properly used, to the objections which are applicable to most other anodyne therapeutic applications. By teaching a patient what are the anodyne effects of morphia, chloral, Indian hemp, or alcohol, we may destroy his sufferings only at the expense of his physical and moral well-being. Again, the after-effects of anodyne drugs are often only less disagreeable than the symptoms which they have removed. Electricity is not open to these objections, for, if it does no good, it does not, I believe, do any harm; and for this reason, if for no other, it deserves every trial as an anodyne. All three forms of electricity are employed for the relief of pain, but the most generally useful for such purposes is undoubtedly galvanism. There are many cases of neuralgia on record which have resisted every known method of treatment, but have yielded after a few applications of the constant current. In employing the current for this purpose, I think the true *locus morbi*, if it can be made out, should be included between the poles. If there is tenderness over any of the vertebræ corresponding with the part of the cord from which the painful nerves arise, one of the rheophores should be placed at or a little above this spot. The other rheophore should be applied seriatim to the various "painful spots" along the course of the nerve. The pain under the left breast so common in anæmic women is not infrequently relieved by electricity, as is also ovarian neuralgia, and some forms of lumbago. Rheumatic pains localised in certain muscles, most commonly the deltoid, and sciatica, are also frequently rapidly relieved, by electricity. (Dr. G. V. Poore, p. 44.)

Facial Neuralgia.—*Gelseminum.*—Gelseminum administered in doses of fifteen minims of the tincture every six hours in an ounce of dill water will rarely fail to give decided and lasting relief in cases of facial neuralgia so often seen amongst badly nourished women, if unconnected with any evident local inflammatory changes. The pain does not usually disappear until after the third or fourth dose. (Dr. J. Sawyer, Dr. E. Mackey, pp. 43, 44.)

Hysterical Paralysis.—Hysterical paralysis is especially susceptible to electrical treatment, and with it we occasionally work apparent miracles. When a patient who has no will to move her muscles sees that her muscles can be made to move in spite of her will, it is no wonder that such a discovery should exercise a wholesome moral influence over her mental condition. (Dr. G. V. Poore, p. 51.)

Neuralgia.—*The Chloro-Phosphide of Arsenic.*—The chloro-phosphide of arsenic is an excellent preparation of phosphorus for internal administration in cases of neuralgia. It is also more a general tonic than any other preparation of phosphorus. It is prepared by bringing phosphorus and arsenic together in a finely divided state in the presence of hydrochloric acid. This is an operation requiring great caution in manipulation. The dose is from 15 to 20 minims three times a day, after meals. (Dr. C. H. F. Routh, p. 57.)

Nitrite of Amyl.—Nitrite of amyl, when inhaled during a state of unconsciousness, has a specific action upon the motor centre of the mouth, and calls into action, by preference, the muscles of the lips and lower jaw. The mode in which it performs this action, whether reflexly or through the agency of the vaso-motor apparatus, is as yet only a subject of speculation. The fact that the movements which it evokes are consentaneous with the appearance of flushing in the face, gives probability to the latter hypothesis; while, on the other hand, one observation, that when administered hypodermically the nitrite failed to induce yawning in a case in which it had induced it when inhaled, seems favourable to the other view. (Dr. J. C. Browne, p. 69.)

Mr. Smith's Inhaler for Nitrite of Amyl.—In order to use nitrite of amyl successfully an inhaler is necessary, as some cases of angina pectoris demand its very rapid and thorough administration, and moreover it is an expensive remedy, and the usual primitive method of exhibiting it is wasteful. An inhaler admirably adapted for the purpose has been made for Mr. C. J. Smith, by Krohne & Sesemann, of Duke Street, Manchester Square. (Mr. C. J. Smith, Lancet, June 20, p. 871.)

Sciatica.—Sciatica is not a rheumatic disease, except in a few rare cases. In the ordinary form of the disease iodide of potassium is useless; but in syphilitic patients its action is often marvellous. In every case it is well to consider the possibility of the patients having had syphilis, perhaps, at some long antecedent period of life. The pressure of a loaded bowel, a gravid uterus, or a tumour, upon the nerve within the pelvis, may produce the disease, and these questions must be carefully considered in the treatment. In cases where there is a conjunction of the gouty with the neurotic temperament the patient should sedulously avoid beer and all saccharine wines, and should be very moderate in his total allowance of food, especially of meat and other distinctively nitrogenous foods. Vichy water may do good in these cases. Most cases of sciatica are embraced in none of the foregone classes, but are simple neuralgias. In no instance of sciatica ought we to allow the pain to continue very long before putting in action a remedy which has approved itself in the hands of some of the best observers in Europe, of the highest value for sciatica,—I mean the constant battery current, a remedy so powerful (particularly in this form of neuralgia) that, but for the expense and trouble attending its use, it should be employed as the sole treatment in three-fourths of the cases of sciatica. It is absolutely necessary to have a good instrument, such as Weiss's or Stöhrer's constant-current machines. From twenty-five to thirty-five cells will commonly be required, and the best method of application, on the whole, is the following:—The negative pole (the poles are broad moist sponges) is applied as nearly as possible opposite the roots of the nerves which [form the sciatic, and the positive pole is applied in succession to the several foci of pain. The poles should be kept continuously applied for about three minutes at each of these situations, and this should be done either once or twice daily. The supreme utility of hypodermic morphia is such that it can rarely be judiciously omitted in the early treatment of sciatica, especially as the continuance of agony has a peculiar shattering effect on the nerve, which leaves it far more liable to pain than before. (Dr. F. E. Anstie, p. 88.)

Tetanus.—*Chloral and Bromide of Potassium.*—In a case of tetanus in a boy fourteen years of age, ten grains of chloral hydrate and twenty grains of bromide of potassium in syrup and water were given every three hours, the case being watched with great care. The next day the same was given every two hours, with the result of procuring four hours' sleep, with diminution of the tetanic spasms. The case went on satisfactorily, and on the fourteenth day the chloral was discontinued, as its action was so marked, but the bromide was continued in ten-grain doses for a few days longer. The noteworthy feature in the treatment of this case is the quantity of chloral taken by the patient, he having taken 1140 grs. in sixteen days (equal to fully 71 grs. a day) in a most acute attack of tetanus, with the result of the spasms leaving him on May 12th, exactly eighteen days from the date of seizure; while in their place the peculiar action of the medicine showed itself in a variety of ways. All kinds of delusions ensued. (Dr. J. B. Carruthers, p. 78.)

TIC DOULOUREUX.—*Deep Injection of Chloroform.*—Dr. Bartholow (of Ohio, U. S.), recommends as a useful therapeutic expedient the deep injection of chloroform in cases of tic douloureux, by this is meant the injection of chloroform deep into the tissues in the neighbourhood of the affected nerve. In the cases which have been reported, the infra-orbital branch of the nerve has been the seat of the *tic.* In these cases the operation consists in passing the needle under the upper lip in the direction of and near to the infra-orbital foramen, and then injecting from ten to twenty minims of pure chloroform. Very considerable pain is experienced at the moment of the injection, and for a few minutes subsequently, but this presently subsides and is succeeded by a feeling of numbness and of anæsthesia of the parts into which the chloroform diffuses. A puffy swelling quickly forms at the site of the injection, and an induration, which remains for several days, follows. The numbness of the lip and cheek continues for a variable period—for a week or more. Systemic sensations, such as giddiness and sopor, due to the diffusion of the chloroform into the blood, are soon experienced, but these effects may be scarcely perceptible, and are never alarming. Indeed, the results, so far as systemic effects are concerned, may be regarded as absolutely free from danger. (Dr. R. Bartholow, p. 65.)

AFFECTIONS OF THE CIRCULATORY SYSTEM.

ANEURISM OF THE ARCH OF THE AORTA.—*Electrolysis.*—In some cases at all events, the want of success has been due in great measure to using it too strong, and that it is much better to employ a weak current, and, if necessary, to continue the operation for a longer period of time. The needles to be used should be sharp and not too coarse, and that portion which penetrates the skin, the walls of the sac, and intervening tissues should be insulated with vulcanite. They should be oiled before being introduced. In the majority of instances one needle is sufficient, but sometimes, especially in the case of large aneurisms, two or more may be necessary. There is much difference of opinion as to how the needles should be connected with the battery. I prefer connecting them with the positive pole. In this respect I differ from Dr. Althaus, who says: "From the results of the foregoing cases, I have no doubt whatever that the most effective application of the current is that when both poles are inserted into the sac. This mode of application is also that employed by Ciniselli and Dr. Duncan of Edinburgh. Both poles are useful in different ways. The positive produces a small firm clot, and the negative a large soft one. When only one pole is in the sac the resistance encountered by the electricity is so great that a much larger galvanic power has to be used to produce any effect at all, and even then the effect of that pole which remains outside is lost." The kind of battery to be used is not of very much importance provided that it is in good order. (Dr. McCall Anderson, p. 167.)

GLUTEAL ANEURISM.—The conclusions to which present experience seems to me to point in the treatment of gluteal aneurism are as follows: 1. Gluteal aneurisms, both traumatic and spontaneous, are very favourably circumstanced for the treatment by either rapid or gradual compression, applied to the aorta or common iliac. 2. If this treatment does not succeed by itself, it may be supplemented by coagulating injection or galvano-puncture performed while the patient is narcotised, and the circulation commanded. 3. When such treatment fails, and particularly in aneurisms with imperfect or ruptured sacs where it is not indicated, the internal iliac must be tied when the surgeon thinks that he cannot find the artery outside the pelvis. But when the artery is accessible, the old operation, or the operation of Anel, should be practised, according to the size and extent of the tumour. 4. The ligature of the internal iliac artery is liable to failure in cases of spontaneous aneurism from a diseased condition of the coats of the artery, and should always be avoided when other means of treatment are available. (Prof. T. Holmes, p. 149.)

Heart Diseases and Aneurisms.—*Effect of Diet on.* An absolutely non-nitrogenous diet produces a marked lessening of the power of the heart. The pulse becomes smaller and softer, and if the sphygmograph is used, the height of the up stroke is only half of what it is in the normal state of the man. Possibly this fact may become useful along with rest in the treatment of aneurisms, and heart diseases accompanied with over-action. Arrowroot cakes made with butter and sugar are the most convenient non-nitrogenous diet. (Dr. E. A. Parkes, p. 114.)

Inguinal and Femoral Aneurism.—Surgical Treatment.—Experience has shown that the treatment of inguinal and femoral aneurism by pressure is not so successful as that by cutting operations, whether in unruptured aneurisms, after the method of Hunter, applied to the external iliac artery or the femoral, or in ruptured aneurisms, by tying both ends of the vessel. My own opinion, derived from an extensive search into the published records of practice, and from a tolerably long experience of the results of treatment in our hospitals, is that the treatment of aneurism by operation in the latter is, on the whole, eminently successful. At the same time, I believe that this success might be even further extended if the treatment by compression, and particularly by digital pressure, were more completely and more systematically carried out than it is at present, and if hospital surgeons had sufficient confidence and sufficient interest in the method to sacrifice to it the time and attention which are necessary in order to obtain from it the best results which it is capable of giving. Mr. Oliver Pemberton published an interesting case of aneurism of the external iliac. Seeing the danger of a ligature to the common iliac, which was at that time (1859) the only known alternative, Mr. Pemberton tried the effect of pressure on the artery above, but found that this did not arrest the circulation, which, however, he noticed, was much retarded by pressure on the sac itself. Accordingly, Carte's compressor was carefully applied to the sac itself, under the management of two senior students, with only sufficient force to retard the circulation, and for not more than three or four hours at a time—an average of about seven hours a day. For a fortnight no good was done. During the next eight days a good deal of coagulation was procured. He was then allowed a rest of nine days, and permitted to move about the room. Then followed nine days of treatment, averaging six and a half hours a day; and from that time the aneurism ceased to pulsate. When Mr. Pemberton published his Address the man was still alive, active, and well, at the age of eighty-three. The remains of the aneurism were represented by an indurated enlargement the size of a chestnut. (Prof. T. Holmes, p. 156.)

Palmar Aneurism.—Carefully bandage the forearm with flannel, place it upon a posterior splint, and let it be well elevated on pillows; the tumour itself being left uncovered, and an ice-bag laid upon it. Digital pressure should now be applied to the brachial artery, so that not a drop of blood is allowed to pass. In the case from which these directions are taken the tumour became consolidated in forty hours. (Mr. W. MacCormack, p. 170.)

In a case of aneurism of the palmar arch, which had spontaneously burst, the following was the plan of treatment adopted. The thumb and fingers were bandaged separately with narrow strips of calico, carried evenly from their extremities upwards toward the hand. These were fixed, with the fingers flexed upon the hand, and firm pressure made by carrying several turns of a calico roller over the compress, and round the hand. Compresses of lint, about four inches in length, were laid along the line of the radial and ulnar arteries, and secured by a roller bound firmly round the wrist and forearm, as far as the bend of the elbow. The hand was placed across the chest, and the limb confined in a sling, the forearm being flexed somewhat beyond a right angle. The patient was kept in bed, and his arm flexed and immovable. The bandages and compress were renewed on the sixth day, and allowed to remain ten days more, when the discharge became purulent. By degrees the suppuration ceased, and the case was permanently cured. The object of the pressure is to check the force of the whole circulation in the limb; not only the current through the larger arterial trunks—the radial, ulnar, and interosseous, in the forearm and at the wrist—but also through the smaller vessels and capillaries in the hand and fingers, until the injury is repaired. This is not done effectually unless the pressure is made equally on the distal side of the palmar arches, beyond the aneurism or other seat of injury. (Mr. E. L. Hussey, p. 167.)

Popliteal Aneurism.—The first thing in a case of popliteal aneurism is to determine the nature and strength of the sac, the amount of coagulum contained in it, and the position of its orifice, and we should base our choice of the method to be first adopted upon these. The choice between the ligature and some form of pressure (including genuflexion amongst the latter) will rest chiefly upon the presence or absence of a thick, well-formed sac, lined with some amount of coagulum; on the judgment of the surgeon as to the relations of the sac to its orifice; on the acute or chronic nature of the symptoms; and on the presence or absence of disease of the heart, arteries, or kidneys. The most promising cases for compression are those with a thick sac and a certain amount of fibrine deposited, without urgent symptoms or rapid advance, and where the characters of the bruit and of the pulsation point to the conclusion that the aneurism is not fusiform. And in those cases where the presence of other general complications render the surgeon anxious to avoid the risks attending a serious operation, compression has very often succeeded; but many cases of successful ligature of the femoral artery have occurred in patients suffering from cardiac or renal affections, or with aneurisms in other parts. If compression does not succeed at first, how long should it be persevered with? This question can only be answered in very general terms. Considering the distress and disappointment, and sometimes acute suffering, to the patient of prolonged compression; considering, too, that experience up to the present time points to the conclusion that a patient is not more, but less likely to recover from ligature of the femoral if a prolonged application of pressure has previously been made; and if it can be shown that the Hunterian operation is much less dangerous than we have been taught to regard it, judging only from the experience of a former generation, recorded by Norris and other statistical writers,—it would be better to abandon the compression treatment after a careful, but very moderate trial, if it does not seem to be doing good, and then to resort to the ligature before the patient's chance of recovery from that operation has been permanently impaired. As to how long a time is implied by "a very moderate trial," that must be decided by the individual cases, but my own opinion is that more harm than good generally results from protracting the attempt beyond a week. (Prof. Holmes, p. 164.)

Purpura Hemorrhagica.—*Hypodermic Injection of Ergotine in.*—In a severe case of purpura hemorrhagica, occurring as a complication of typhoid fever, every kind of styptic used failed, and the case appeared quite hopeless. Under these circumstances I injected hypodermically one grain of the liquid extract of ergot at a time. After the first injection, the hemorrhage from the nose, the stomach, the bowels, and the bladder diminished greatly, while fewer new purpuric spots appeared on the body. The second injection completely arrested the hemorrhage. The patient being nourished and stimulated freely her strength rallied, the fever came to a crisis a few days afterwards, and she made a perfect recovery. (Mr. W. L. Lane, p. 174.)

AFFECTIONS OF THE RESPIRATORY SYSTEM.

Acute Tuberculosis.—Acute miliary tuberculosis often commences with the symptoms of a common cold, and subsequently so much resembles enteric fever that even with the aid of the thermometer there may be much doubt as to the diagnosis. The duration of the disease and the symptoms in tuberculosis and enteric fever are so much alike that it is probable the one is not unfrequently mistaken for the other, and that the rarer disease is set down as an example of typhoid fever presenting, it may be, supposed anomalous symptoms. In other cases it is apt to be mistaken for capillary bronchitis, or even meningitis.

The general febrile condition, delirium, and diarrhœa of acute tuberculosis give a certain resemblance to a case of enteric fever; but the history of cough and pain in the chest, the dyspnœa and lividity of face, with the almost negative information afforded by the physical examination, ought to lead us to a correct conclusion as to the nature of the case. In fact, a livid countenance, dyspnœa, and greatly quickened respirations, with feeble breath-sounds, or comparatively few rhonchi, and a high temperature, together with the absence of dulness on percussion and of bronchial breathing, seemed to be the most positive signs of the existence of a primary pulmonary tuberculosis. (Dr. J. W. F. S. Shand, p. 83.)

PHTHISIS.—It is quite a mistake to suppose that phthisis is always or even generally a constitutional disease. It is, on the contrary, in a large number of cases entirely local in its origin, having nothing to do with tubercle or any constitutional taint. In many instances, when tubercle is found in the lungs at the post mortem examination, it is an effect and not the cause of the disease. When the formation of tubercle is the primary morbid condition, much of the subsequent destruction of the lung tissue is the result of the inflammatory lung products to which it gives rise by its irritation. (Dr. F. T. Roberts, p. 76.)

Raw Meat and Phosphate of Lime.—The use of raw meat has been generally found impossible for any length of time, simply because the patient cannot be induced after a certain time to swallow it, or the stomach to tolerate it. The fault rests entirely with the mode of administration. A pound to a pound and a half of fresh beef, deprived of fat, bones, &c., is placed over a quick fire for a few minutes, in order to whiten and harden the external surface only; the piece of meat is then cut into two or three pieces corresponding to the size of the meat-press, and all the juice is extracted by the pressure of the powerful screw. The superficial coction is necessary to overcome the elasticity of the meat, which renders the extraction of the juice a very difficult matter unless more powerful machines be used than the simple one at present required. A pound and a half of good fresh meat gives a teacupful of juice. The juice should be prepared daily. This juice, having all the physical properties of raw meat, is easily digested, is well tolerated, and, served in the following manner, is always very grateful to the patient. The juice should be mixed with equal parts of tepid broth, made of bones and flavoured with salt and pepper, and to which tapioca, vermicelli, &c., can be added. Care, however, should be taken that the broth is never more than *tepid*, otherwise coagulation takes place, and the desired effect is not obtained. The treatment of the consumptive patient by this method is the following: Early morning: Warm milk (not boiled), with bread and butter, and, if the appetite be good, some fat bacon and eggs. At eleven or twelve oclock, breakfast, before which a drachm of the syrup of triple phosphate should be taken; during the meal itself, a dose of the muriatic phosphate of lime, and half the daily allowance of the raw meat juice in some broth; the meal should consist, according to appetite and digestive powers, of fish or poultry, or white meats, fresh vegetables, and a few glasses of good alcoholic wine. Dinner at six o'clock on the same principles; broth with the remainder of the raw meat juice, and, instead of the triple phosphate, a dessert-spoonful of cod-liver oil can be taken with advantage after the meal, if the liver be not enlarged and fatty, and the digestion good. The muriatic solution, or wine of phosphate of lime, should also be taken during the dinner. At night, before retiring to rest, a cupful of warm fresh milk, diluted one-third with Vichy water. No medicines whatsoever, beyond those mentioned, should be administered, unless some special indications or some urgent symptoms claim their use. (Dr. H. Blanc, p. 86.)

Strapping the Chest.—There is no remedy, except the use of cod-liver oil, of more real value in the treatment of phthisis than restraining chest movement by strapping the chest with long strips of plaster. I have made an improvement in the apparatus, which diminishes the frequency of the renewal of the plasters and strengthens their grip. The following description contemplates their application to the upper part of the chest. I have prinicpally used emplastrum roborans spread on swan's-down. The sheet, which is half a yard wide, is to be cut into transverse strips. Each strip is eighteen inches long: the breadth should be about three-quarters of an inch. The plasters should be only very slightly heated. The first strip runs up the back in the space between the spinal column and the posterior border of the scapula on the affected side, its starting-point being well below the level of the inferior angle of the scapula. It is to be applied gradually and deliberately, every portion being well rubbed in before the next portion is brought into contact with the skin. It is to be carried over the shoulder and down the front of the chest. In rounding the shoulder it is to be pulled tight and held so while it is being, bit by bit, brought into contact with the front of the chest, the chest just at this period being in the act of strong expiration. The next strip, which is horizontal, commences at the spine, crosses the posterior end of the first strip, passes under the axilla and on towards the sternum. It also is to be applied deliberately and with friction; as it is rounding the chest it is to be pulled tight, the patient at the same time making a forced expiration. Other strips are to be applied in a similar manner, vertically and horizontally time about, until it is judged that a proper grasp of the chest has been obtained. I avoid the scapula as much as possible. Some of the horizontal strips should cross the sternum, and some the spine. A large rectangular piece of plaster should now be applied, occupying the interscapular space and reaching down to the last dorsal spine. Another squarish piece is to cover the front and upper part of the chest between the clavicles and mammæ. These, if smoothly applied, secure the ends of the strips from ruffling up, and give additional *points d'appui.* We usually by this treatment obtain immediate and marked diminution of the cough, cessation of pain, relief of dyspnœa, and reduction of temperature; and the patient usually expresses at once a feeling of great comfort. (Dr. J. McCrea, p. 80.)

PHTHISICAL SWEATING.—*Atropia.*—The sulphate of atropia has some power of arresting the distressing sweats of phthisis. The sulphate of atropia is best prescribed in pill, with extracts of gentian; watery solutions are not to be depended upon, for they soon spoil by keeping. The first dose should in no instance be larger than one-eightieth of a grain, and guided by the results, the dose may if necessary be increased to one-sixtieth, or even one-fiftieth of a grain; but if this latter quantity be exceeded, well-marked symptoms of poisoning will almost certainly ensue. (Dr. J. B. Williamson, p. 88.)

PLEURITIC EFFUSION, OR EMPYÆMA.—*Tapping the Chest.*—There is much more difficulty in diagnosing a pleuritic effusion than is generally allowed. Dulness on percussion has no distinctive value, and vocal resonance and œgophony are variable and untrustworthy, and often absent. Local fremitus is the only sign to which we can look for any real help in cases where we have to decide between pleuritic effusion, aneurism, intra-thoracic cancer, or pleural hydatid. It is to be hoped that teachers will beware of speaking too confidently of the ease of distinguishing pleuritic effusions. It is agreed that when effusions are small they are to be left alone unless a small purulent effusion should disturb the general health. In this case it should be removed at once. Larger effusions, whether serous or purulent, should be removed at once, as they threaten both life and lung. The recorded results of the medicinal treatment of such effusions are very bad; while those of operative treatment are good, or, indeed, excellent. This doctrine has been slowly established, but now is fairly acknowledged by all men of experience. (Dr. C. Allbutt, p. 92.)

In cases of empyæma where the pus has made itself another way, we should still make a free artificial opening, otherwise the pus will be evacuated very imperfectly, the retained quantities becoming decomposed, and the lung in great danger of breaking up. For the evacuation of mere serum, a fine trocar inserted anywhere in the lower chest is sufficient, the fluid runs off, and nothing more is needed. For dropsical effusions, then, we require a simple exploring trocar. For inflammatory and sub-inflammatory effusions we require a carbolised trocar or needle, and some apparatus to prevent the entrance of air. One operation, even, in the latter kind, sometimes suffices if the fluid be serous. The loudly praised instrument called the aspirator may be invaluable in many cases, but in tapping of the pleura I have found it cumbrous and even injurious. I have returned to the use of the old trocar with a flexible tube, by means of which we draw off the fluid under water. When the effusion is purulent a free opening should be made at once. I cannot call to mind a single case, in which closed operations succeeded in effecting a cure, and in all my own cases I believe we have had to come to an open operation sooner or later. Nay, more, I am convinced that in three cases the closed operation has done harm. By relieving the intra-thoracic pressure, absorption has become possible, and hectic has set in. The open operation, on the contrary, if so managed as to give a free outlet to the pus, always allays and generally removes hectic. Of late, when once satisfied that pus exists, I have regarded all closed operations as at best a waste of time. Since the introduction of the aspirator I have repeated my trials of the closed operation with no better results. The advantage of the free posterior operation is the perfect drainage, to which both dressers and nurses freely testify. The patient must be kept in bed; no pus can putrefy in the thorax; and no injections will be required in uncomplicated cases. The patient must be rigorously confined to bed, not only for the position's sake, but also to avoid chill. (Dr. Clifford Allbutt, p. 92.)

In using the aspirator, it is of the utmost importance to ascertain and ensure beforehand that the instrument is clean and its joints and taps in perfect order. The pointed tube or needle used for puncturing should always, in the first place, have a stilette pushed through it to clear away any particle of dried and encrusted matter, which may block up the passage, or afford a nidus of putrefaction or infection which may get into the wound and set up their undesirable processes. The india-rubber tube connecting it with the vacuum cylinder must also be washed in carbolised water or solution of the permanganate of potash, to ensure perfect sweetness; and finally, just before using, the needle should be dipped in carbolised oil. Those who are sceptical as to these precautions should remember the results which sometimes spring from a mere puncture with a foul instrument or splinter. Then the syringe itself should be examined to see that no air can be admitted through the joints. If this be the case, the air will show itself in frothy bubbles as the fluid rushes into the vacuum, and there will be a danger of its getting into the pleural cavity at the next stroke of the piston; this might prove to be a cause of putrefactive changes in the pleural effusion. The admission of air is most likely to happen towards the end of the operation, when the fluid is exhausted or nearly so. In cases of empyæma the use of the aspirator may not suffice, the trocar may be called for, followed by the insertion of a drainage tube. In any case it is better, I think, to be guided in the choice of the site for operation to a great extent by the percussion sounds and stethoscopic indications. If the dulness of the percussion note, and the absence of respiratory sounds be more decided in one place than another, it will be better to choose that part for operating. It is well to be guided also in the choice of a situation by the presence and amount of intercostal bulging, and the absence of the expiratory wave, on principles similar to those which determine the opening of any other abscess as its "pointing" may indicate. And I would hesitate about puncturing even at the most accredited place, unless this sign was in some degree present. Adhesions are indicated mostly by a certain amount of contraction or depression, more visible at the commencement of inspiration at the intercostal space where it occurs. In all cases an incision, long enough to admit the tip of the finger, should be made through the skin and fibres of the serratus magnus or latissimus dorsi muscles before the pointed tube or trocar is introduced, otherwise the instrument, especially if slender, may even fail to pierce the skin, or may slip over a rib or be drawn aside by the spasmodic contraction of a muscle, and, slanting off obliquely, may fail to enter the thorax, or may puncture it at a part not exactly contemplated. I make it a point to feel clearly, with the finger, the position of the upper border of the under rib, and in stout subjects also to divide some fibres of the external intercostal muscle before puncturing. In all cases where the puncture is not intended to remain open, the skin should be drawn upwards before using the scapel, so as to form a valvular covering to the puncture when the instrument is withdrawn. Even where the puncture is a very small one, this increases the safeguards against the admission of air, so important in cases where the effusion is serous only. (Mr. J. Wood, p. 89.)

Strapping the Side.—In a case of pleuritic effusion to a considerable amount, the side was firmly strapped with long pieces of plaster covered with two or three layers of strips of bandage steeped in a mixture of gum and chalk. The pain and distress in breathing ceased immediately the application was made, and absorption commenced speedily, so that in a week the fluid had greatly diminished in quantity, and at the end of a fortnight it was entirely removed. (Dr. F. T. Roberts, p. 82.)

Pneumothorax.—Pneumothorax usually results from the giving way of a tubercular cavity in the lung, and may be limited or not, according as the point of escape is bounded or shut off from the rest of the pleural cavity by adhesions. In either case the best plan of treatment is to strap the side with pieces of some firm plaster, such as emp. roborans—in the more extensive cases covering this over with strips of bandage steeped in a mixture of gum and chalk. If this treatment is commenced soon the escape of air is limited by restraining the respiratory movements. Should the pleural sac be much distended, however, the best plan of treatment would be to remove the air from the pleura by means of the aspirateur, and then immediately put on the apparatus as described. (Dr. F. T. Roberts, p. 82.)

Winter Cough and Bronchitic Asthma.—*Ipecacuanha Spray.*—In this common but obstinate complaint our results have been very striking, although in many of our patients so bad was the breathing that, on being shown into the out-patients' room, they dropped into a chair, and for a minute or so were unable to speak, or only in monosyllables, having no breath for a long sentence. We used the ordinary spray-producer, with ipecacuanha wine pure or variously diluted. On the first application it sometimes excites a paroxysm of coughing, which generally soon subsides, but if it continues a weaker solution should be used. The patient soon becomes accustomed to it, and inhales the spray freely into the lungs. At first the patient inhales less adroitly than he learns to do afterwards, as he is apt to arch his tongue so that it touches the soft palate, and consequently less enters the chest than when the tongue is depressed. The spray may produce dryness or roughness of the throat, with a raw sore sensation beneath the sternum, and sometimes it causes hoarseness; whilst, on the contrary, some hoarse patients recover voice with the first inhalation. As they go on with the inhalation, they feel it getting lower and lower into the chest till many say they can feel it as low as the ensiform cartilage. The dyspnœa is the first symptom relieved. The night after the first application the paroxysmal dyspnœa was often improved, and the patient had a good night's rest, although for months before the sleep was much broken by shortness of breath and coughing. The difficulty of breathing on exertion is also quickly relieved; for often after the first administration the patient walked home much easier than he came to the hospital, and this improvement is continuous, so that in one or two days or a week the patient can walk with very little distress, a marked improvement taking place immediately after each inhalation; and although after some hours the breathing may again grow a little worse, yet some permanent improvement is gained, unless the patient catches a fresh cold. We have heard patients say that in a week's time they could walk two miles with less distress of breathing than they could walk a hundred yards before the spray was employed. In some instances two or three days' daily spraying is required before any noticeable improvement takes place, this comparatively slow effect being sometimes due to awkward inhalation, so that but little ipecacuanha passes into the bronchial tubes. The effect on the cough and expectoration is also very marked, these both greatly decreasing in a few days, though the improvement in these respects is rather slower than in the case of the breathing. Sometimes for the first few days the expectoration is rather increased. It speedily alters in character, so that it is expelled much more readily, and thus the cough becomes easier, even before the expectoration diminishes. Treated in this way the patient is soon enabled to lie down at night with his head lower, and in a week or ten days, and sometimes earlier, can do with only one pillow. This improvement occurs in spite of fogs, damp, or east winds—nay, even whilst the weather gets daily worse, and when the patient is exposed to it the chief part of the day. All these patients came daily to the hospital. Of course it is much better to keep the patient in a warm room. (Dr. S. Ringer and Mr. W. Murrell, p. 101.)

AFFECTIONS OF THE DIGESTIVE SYSTEM.

Alcohol.—What amount of alcohol increases appetite, when should it be given, and in what form? With regard to the *amount*, I should say that if I may judge from my own experience on healthy men and on patients, the quantity which should be given for this particular purpose of increasing appetite should not exceed one fluid ounce of absolute alcohol in a day, and I think half an ounce is often enough. If this does not improve appetite, a larger quantity will not do so. I am quite sure we cannot force appetite by increasing the amount of alcohol, but, on the contrary, shall run the risk of lessening it. Alcohol has sometimes to be given in large quantities to urge on a failing heart or to blunt sensation; but this is another thing. In such cases a paramount necessity compels us to disregard the question of appetite. But when, as in most cases, our object is to get more nourishment into the body, then we should keep, I believe, to small doses, and if the medicine fails, try something else. I must add to this, however, by affirming what I am quite sure of by observation, that there are persons whose appetites and digestions are injured by even small quantities of alcohol, and who digest much more and eat much more when water only is taken. The healthy digestion of children is, I think, always injured. (Dr. E. A. Parkes, p. 115.)

Dietetic Treatment of Disease.—A proper admixture of different articles of diet is necessary to preserve healthy digestion. For instance, if only dried meat and bread is eaten, without vegetables, as has been tried by soldiers in order to save the transport of bulky articles, in a few days indigestion, with depression of spirits and an eruption of little pimples, results. The treatment of "irritable gastric dyspepsia" by mild farinaceous and vegetable food is well known, but the rapidity of cure of these cases seems to me to show that the best way would be not to give vegetables at all, or any nitrogenous food, but for two or three days to let only starches and fats in some digestible form, and without salt, enter the stomach. I found these men could take from two to three ounces of butter in the shape of arrowroot biscuits, and also spread upon these biscuits, without producing any of the dreaded "bilious" effects usually attributed to fatty foods. I have noticed two conditions to be produced by a purely non-nitrogenous diet, which may be useful in the treatment of disease. Such a diet lessens in a very great degree the acidity of the urine. We know that the free urinary acidity is usually attempted to be lessened in two ways: first, by giving alkaline medicines or drugs which become alkaline in the body, as the acetates or citrates; and, secondly, by giving fresh fruits and vegetables, which contain similar salts. Now, in both these plans, it has appeared to me that the acid is merely neutralised, and that its formation is not prevented. On the contrary, I have formerly given some evidence to show that the taking of alkalies may really increase the acid-building processes in the body. What these two plans do, I take it, is to neutralise a urine unduly acid, and thereby render it less irritating to the urinary surfaces; and this is a great service, only that it is not all that is sometimes required. A non-nitrogenous and non-saline diet lessens the formation of acid, and to such an amount that it may be made of use in the treatment of cases of lithiasis. The mode in which I gave the non-nitrogenous diet was as follows:—Butter was melted in a jug placed in a water-bath, and the liquid oil was poured off. Arrowroot cakes were made with a portion of this butter, and a little sugar was added. A good cook can thus make very agreeable cakes, which should not be in the least tough. These arrowroot cakes were eaten by my patients with great relish when buttered; they also took arrowroot jelly sweetened. The healthy men on whom I experimented ate as much of this food as they liked; they took on an average ten ounces of arrowroot, six ounces of sugar, and two ounces and one-third of butter, in each twenty-four hours. This quite satisfied hunger, and maintained weight; and all four men on whom I made these trials liked this diet, and felt perfectly well on it. The longest time I kept a man on it was five days, and he did a hard day's work on the fifth day. If it is wished to add a little nitrogen to suit a diet, but not to give meat or bread, it is best done by substituting ground rice for some of the arrowroot and sugar; one ounce of rice contains three grains and a half of nitrogen. If more nitrogen is desired, then it may be given in the form of eggs (yelk and white); an egg of two ounces in weight contains nine grains and one-third of nitrogen. The influence of this diet of arrowroot and butter oil on the free acidity of the urine is very interesting. It shows us that something still remains to be solved, even after the important observations of Bence Jones, William Roberts, and J. Vogel. It is clear that the free acidity of the urine is unconnected with the changes in the body of the starchy and oleaginous aliments. The lactic acid formed by the one does not, we know, appear in the urine, and the fatty acids coming from the other appear also to have no effect. (Dr. E. A. Parkes, p. 112.)

ENLARGEMENTS OF THE LIVER AND SPLEEN AND GLANDULAR SWELLINGS.—*Dispersion by Deep Puncture.*—Enlargements of the liver often disappear rapidly after repeated plunges of an ordinary hydrocele trocar when seeking unsuccessfully for suspected abscess, and without the occurrence of any inflammatory symptoms. The native hakims of the East have been accustomed to puncture the liver and spleen with long sharp stilets, in order to bring about the absorption of those organs so common in hot countries. Other enlargements besides those of liver and spleen may be made to disappear by puncture. Nothing is more tedious than those chronic glandular swellings which, in strumous subjects, often in hot countries follow upon trifling causes, such as angry mosquito bites, riding a rough bucking horse, over-exertion, or a strain in cricketing and so forth. I have seen an officer laid up for many months, and ultimately invalided with a large mass of indurated enlarged glands occupying the whole inguinal region, and resisting all the recognised routine of treatment. Accidents showed me that deep puncture of such masses with a common lancet held at right angles to the swelling, and pushed down to its bottom, will often cause absorption to set in and proceed rapidly. The first case in which this occurred to me was one of a mercantile gentleman, disabled by a mass of swollen inguinal glands, hard as a board almost, and resisting all treatment. This patient's loss of time at office was a very serious matter to him, and, influenced by his despairing impatience, I plunged a lancet perpendicularly into the mass as far as it would reach. The point came out tinged with matter, and hard pressure brought up a little cheesy, ill-formed pus, but no discharge whatever followed, and absorption set in and proceeded rapidly. (Deputy Inspector-General Cameron, p. 210.)

Exploration of the Liver by Puncture.—Those who have never witnessed hepatic explorations are slow to believe in their safety and good effects. In suspected abscess, the enlarged liver may be punctured again and again to search for the abscess, and no inflammatory or other consequences will result. Even provided no abscess is met with, the best effects possible may be expected from the operation, as the liver, frequently, rapidly diminishes in size after it. If abscess is met with, it is not necessary to leave the canula in, and in many cases rapid recovery follows. It is an unsuccessful plan of treatment to wait for pointing of an hepatic abscess, as the patient often dies exhausted before this takes place, or succumbs earlier from purulent absorption. (Deputy Inspector-General Cameron, p. 211.)

FUNCTION OF THE LIVER.—In the normal state the liver is always doing two things: it is *forming* new bile, and it is *excreting* old bile which it has received from the intestine by means of the portal vessels. When a biliary fistula is made and the bile is drawn away as fast as it is secreted, none gets into the intestine, and therefore no old bile reaches the liver; consequently, the quantity collected represents only the new bile formed in the liver, and is of course much less than that which would normally pass through the ductus choledochus into the intestine. If all the bile were absorbed there would be no need for the liver to go on forming it, but this is not the case, for only a part of it is reabsorbed, and the remainder is decomposed and excreted with the fæces. (Dr. T. L. Brunton, p. 119.)

HEMORRHOIDS.—The old operation of tying an internal hemorrhoid is an excellent one, but it has the disadvantage of being very painful. The operation may be performed with the elastic ligature. The pile is seized with a pair of forceps which closes with a spring or a screw and terminates in a ring. The elastic ligature is carried with the point of the finger several times round the end of the forceps and tied. The protruding pile or piles are then returned into the rectum. They slough off in the same manner as if tied with a silk ligature, but there is this additional security—namely, that the ligature always remains tight. If the pile be large, and a ligature is applied, after it has eaten its way partly through it becomes loose, and should the pile not be completely dead the circulation in it may be in part restored, and there is some danger of the products of the decomposing mass becoming absorbed. It is astonishing with what rapidity the elastic ligature will cut its way through. The elastic ligature, if used for this or for other purposes, should be solid. If tubular, when stretched it flattens against the parts, and, consequently, does not cut through them so easily. By far the best and safest way, according to my experience. of removing a pile, is to grasp it at its base with a clamp made in the shape of a pair of scissors, curved on the flat, and with the points turned inward; then to cut the pile off with a pair of scissors of the same shape, and to sear the cut surface with an iron after it has passed from a dull-red to a black heat. I much prefer the heated iron to the galvanic cautery. When these fail the nitric acid is an excellent remedy. The best way of applying the acid, according to my experience, is to introduce a small speculum into the bowel, such as was first described by Sir William Fergusson. It has an opening on its side or near its extremity. It may be moved about until the pile projects into the opening. The pile is now wiped dry, and the acid applied on a glass rod. Several successive applications may be made in this way, but during the process the speculum should be held perfectly still. When the acid has produced the effect desired, some chalk-and-water should be freely used, so as to neutralise any remaining acid, and then the speculum may be removed. Performed in this way the operation is perfectly safe, and, as far as the acid is concerned, painless. (Mr. Henry Lee, p. 177.)

Injection of Tincture of Perchloride of Iron.—Internal hemorrhoids are vascular growths, resembling nævus in children, or erectile tissue in adults. They may be entirely destroyed by injecting into each hemorrhoidal tumor about twenty minims of the ordinary tincture of perchloride of iron by means of a hypodermic syringe. To enable this to be done the piles must be forced down so as to be extruded. In a case thus treated, on examination four weeks afterwards, no trace of the piles could be discovered, except three nodules of cuticle, each the size of a shrivelled currant. (Mr. W. Colles, p. 185.)

Linear Cauterisation of the Anus.—The patient, whose rectum has been emptied in the morning by means of an injection, ought to be chloroformed; but if he prefer to remain awake, it is of little importance, as the operation only lasts some seconds. He is laid on the edge of a bed, with one leg extended, and the other bent as if he were going to be operated on for fistula. The assistant raises the disengaged buttock, the surgeon paints the anus and the surrounding parts largely with collodion, whilst an assistant, by means of bellows, drives off the fumes of the ether, which are sure to catch fire when a highly heated cauteriser is brought near them. During these preparations, two knife-shaped cauterisers have been placed in a small furnace, full of charcoal or burning wood. The blades of these cauterisers should be two centimètres long and one wide; the tip and edge should be blunt, as in ordinary cauterisers, but the back should be four or five millimètres thick, so as to hold enough heat. The surgeon takes one of these cauterisers when it is white hot, and introduces it about one centimètre into the anus, bearing with the shoulder of the instrument rather more on the cutaneous than on the mucous orifice, and makes four cauterisation lines, before, behind, on the right and on the left. The operation is terminated when it has lasted five or six seconds. Simple water dressings should then be applied. The tumour soon ceases to be painful, and it is at last completely and spontaneously retracted. (Dr. Woillemier, p. 180.)

Hemorrhoids, Prolapsus Recti, and Fistula in Ano.—The Galvanic Cautery.—Cases of hemorrhoids and prolapsus recti can be treated with greater facility, confidence, and success, with the galvanic cautery than by any other plan of treatment; and fistula in ano can be divided without any loss of blood. The operation for the removal of hemorrhoids, or the cure of prolapsus recti, with the galvanic cautery, differs in no respect from that usually performed with the common cautery. The bowel to be treated is brought well down and into view either by means of the patient who is made to strain over a pan of hot water, or by an enema of warm water. The different portions of the bowel to be removed are then seized and clamped in vertical pieces, radiating from the anus, each clamped portion, or rather the upper half of each portion, being then cut off with scissors. The parts are then made ready for the application of the cautery—the porcelain cautery heated to a red heat. This is to be rubbed over the surface of the projecting mass till it is burned down to the level of the clamp and turned into a dry eschar; each piece is to be dealt with in order, and each clamp removed as its segment is cauterised, the whole being carefully returned and pressed into the rectum when the operation has been completed. When the cautery is efficiently applied no bleeding follows this operation, and very little pain. The pain induced after the galvanic cautery is far less than that which follows the actual cautery. During the application of the cautery the soft parts should be well protected by strips of wet lint or ivory spatulas. In cases of piles as represented by the growth of small vascular strawberry-looking tumours, I have been content with the direct application of the cautery to the growth, having exposed it well by means of a speculum; and I have found this practice a good one. In other cases, again, of prolapsus recti, I have simply scored obliquely in lines the surface of the mucous membrane of the prolapsed bowel, and returned it; and this treatment has been followed by good success, more particularly when employed in the milder forms of the affection. In cases of long standing such treatment is inapplicable. Nothing but the removal of portions of the prolapsed mucous membrane will effect a cure. The operation for the cure of fistula in ano by the galvanic cautery is performed as follows:—The platinum wire, or twist of platinum wire, is first introduced through the fistula, and I generally do this through the groove of the probed director when it has been made to pass through the fistula into the bowel. I then hook, with the finger that is in the rectum, the end of the wire downwards through the anus, and remove the grooved probe, in this way one end of the wire being made to protrude through the rectal orifice of the fistula, out at the anus, and the other through the external orifice of the fistula. The two ends of the wire are then connected with the poles of the charged battery, and the wire heated, the division of the fistula being made either by means of the écraseur, or a gentle sawing movement of the wire, or traction upon it. The wound may then be dressed with oiled lint or cotton-wool, and the case treated upon ordinary principles, the wound having simply to heal by granulation. (Mr. T. Bryant, p. 182.)

Iodide of Potassium in the System.—When iodide of potassium is swallowed it is absorbed from the stomach, passes in the blood to the salivary glands, and is excreted by them much more readily than by the kidneys. It is, however, again and again absorbed and excreted, and does not get out of the system unless a purgative is given to cause its expulsion from the bowels before it can be reabsorbed. The same is the case with the other iodides, such as those of lead or iron. (Dr. T. L. Brunton, p. 118.)

Lead Poisoning.—The lead is present in the body in the form of an insoluble compound which it makes with the tissues, but by the administration of iodide of potassium it is rendered soluble. It then finds its way into the circulation, and is excreted by the kidneys and other emunctories. But the iodide of lead is partly excreted by the salivary glands, for M. Malherbe, of Nantes, and Dr. Sieveking have found it in the saliva of persons suffering from lead-poisoning, and who were being treated by iodide of potassium. The lead salt being swallowed with the saliva, is again reabsorbed, and thus the cure is comparatively slow when patients are treated with iodide of potassium alone. I frequently see patients suffering from lead-poisoning brought on by working in white lead, and for some time I have been accustomed to treat them with five grains of iodide of potassium three times a day, and a sufficient quantity of sulphate of magnesia or other purgative either thrice or once a day, to keep the bowels very freely open, and cause the expulsion of the lead from the alimentary canal as quickly as it is secreted into it. (Dr. T. L. Brunton, p. 118.)

Obstinate Vomiting.—*Enemata of Bromide of Potassium.*—Dr. Girabetti has obtained the very best results from the administration of enemata of bromide of potassium, in doses of from one-half to two drachms, in cases of obstinate vomiting, attending the pregnant state. The same drug, also administered in enemata, has been very successful in the hands of Dr. Laborde, of Paris, in obstinate vomiting connected with disease of the stomach, liver, and intestines. (Lancet, May 30, p. 770.)

Parenchymatous Injection of Carbolic Acid.—Hüter strongly recommends the injection of a two per cent. solution of pure carbolic acid in water as the most active antiphlogistic remedy for all forms of parenchymatous inflammation. He makes the injection in the position where the lymphatics bring the acid in direct contact with the inflamed tissue. The result of such parenchymatous carbolic injection he describes, from experience, as being miraculous; and he says there are no material impediments to its use in organs such as the lungs, spleen, &c., but he has not as yet practised it in these viscera. (Centralblatt, Jan. 24.)

Round Worms.—The best way to prescribe santonine is in a mixture with syrup, so that one grain of santonine is taken three times a day. A case is related in which no less than sixty-two worms were passed under the use of this medicine. (Dr. T. E. Clark, p. 118.)

Sea-Sickness.—When a ship is rolling violently let any one watch a decanter of water on the cabin-table. The water swashes violently from side to side. The same thing precisely is taking place in all the liquids of the body, and it is this varying pressure on the brain, liver, &c., which produces sea-sickness. The following hints for the prevention of the affection are useful:—The stomach should be absolutely empty before going on board, for I have noticed that sick people generally throw up basinfuls of food on the Channel steamers; but, to avoid exhaustion, a good meal should be taken three, four, or five hours before, according to the nature of the food. Meat requires four, in some five, hours for complete digestion. Then one or two hours before embarking, some very strong coffee, tea, or spirits and water, should be taken, without milk or other food. This is to tonify the nervous system, and yet to secure emptiness of the stomach, fluids being usually absorbed in less than an hour. Once on board, repose should be enjoined—the recumbent position is best,—and nothing whatever, solid or fluid, should be taken for twelve hours or more, even then very little. (Dr. J. Henry Bennet, Lancet, Oct. 10, p. 811.)

Tapeworm.—*A Rapid Cure for.*—A. J. Schafish of Washington, says that in treating some cases of tapeworm, he employed no preliminary provisions beyond forbidding the patient to take any breakfast the day on which it is intended to remove the worm, and giving him a large dose of Rochelle salts the preceding night. At ten o'clock in the morning, he had the following at one dose:—℞. Bark of pomegranate root, ½ ounce; pumpkin-seed, ½ drachm; ethereal extract of male fern, 1 drachm; powdered ergot, ½ drachm; powdered gum arabic, 2 drachms; croton-oil, 2 drops. The pomegranate-bark and pumpkin-seed were thoroughly bruised, and, with the ergot, boiled in eight ounces of water for fifteen minutes, then strained through a coarse cloth. The croton-oil was first well rubbed up with the acacia and extract of male fern, and then formed into an emulsion with the decoction. In each case, the worm was expelled alive and entire within two hours. No unpleasant effects followed. In each case, the worm was passed with the head firmly fastened to the side of its body at about the widest part, from which it was with difficulty removed; and the worm was twisted and doubled into various knots. (Brit. Med. Journal, May 16, p. 651.)

AFFECTIONS OF THE URINARY ORGANS.

Albumen in Urine.—*Test for.*—The most accurate test for albumen is the following: add a little concentrated nitric acid to the urine, which should be contained in a test tube or champagne glass. The acid should trickle down the side of the vessel. Admixture of the fluids does not instantly take place. The urine floats on the surface; the acid is underneath. Usually at the point of contact an intensely red, violet, or blue ring forms—the reaction of uroxanthine. Should the colour be green, bile pigment may be present; but if albumen, a circular and well-defined turbidity succeeds, and the flaky material gradually sinks to the bottom. Should the urine be also rich in urates, a turbidity may also be thus formed; but then the albuminous ring is lower than the one due to the urates, and separated from it by a clear ring, and the latter gradually vanishes towards the surface, while the former subsides. The application of heat however dispels all doubt. (Medical Press and Circular, Aug. 19, p. 149.)

Blood in Urine.—*The Guaiacum Test for.*—The following very simple test for blood in urine is given by Professor Almen:—A few cubic centimeters of tincture of guaiacum are mixed with an equal volume of oil of turpentine, in a test tube, and shaken till an emulsion is formed. The urine to be tested is then carefully added, so that it may sink to the bottom. When the emulsion and urine come into contact the guaiacum resin separates, and falls as a fine white, dirty yellow, or green precipitate. If blood is present in the urine, the resin will have a more or less intense blue colour, often almost indigo. In normal urine, or that containing albumen or pus, this blue colour does not appear, and thus proves the absence of blood. (Med. and Surg. Reporter.)

Copaiba Resin as a Diuretic.—In cases requiring free action of the kidneys in order to remove a dropsical or inflammatory effusion there is not any diuretic so satisfactory as the resin of copaiba. Two grains may be given at a dose. (Dr. Moxon, p. 219.)

Diabetes, &c.—*The Action of Valerian.*—The action of valerian is to spare waste of tissue, and this is proved by the fact that if given in cases where there is excessive excretion of urea, as diabetes insipidus, it diminishes the amount. After eight grammes (120 grains) of the extract of valerian have been taken the urea excreted may fall to 600 grains per diem; and there is no diminution in the amount of urine observed until the urea has fallen below its normal quantity, and then only three or four pints may be excreted in twenty-four hours. Certain Indians of Lower California and Mexico are accustomed to go through a course of it for a month before they enter upon a severe expedition, so that they may be better able to bear fatigue. The extract should be given in frequent small doses, and gradually increased in amount, until in some cases a dose of thirty grammes (nearly an ounce) in the twenty-four hours has been reached. (M. Bouchard, p. 123.)

Enlarged Prostate.—In the New-York Medical Journal for July, Dr. Van Buren contributes a highly interesting paper on this subject, the purport of which is to recommend that cases of enlarged prostate should, from the beginning, be treated by catheterism employed by the patient when he has been sufficiently taught. The catheter should be passed from four to five times a day, and the bladder may have to be washed out; but the patient will be a great gainer even as regards time saved, and especially in absence of suffering and prevention of retention. The object is to entirely supersede the efforts made by the bladder to overcome the obstruction, and to prevent the consequent suffering and irritation. The patient, however reluctant to adopt the practice at first, soon is able to follow it, and his life is not only much prolonged, but is passed in comparative comfort. (Medical Times and Gazette, Aug. 29, p. 232.)

Estimation of the Nitrogenous Contents of Urine.—In some cases it is of importance that we should be able to estimate the nitrogen contained in the urine in uric acid, creatine, creatinine, and other bodies. This may be done in the following manner:—Take a small tube of hard glass, about five inches long and three-eighths of an inch internal diameter; one end of this is drawn out before the blowpipe and bent so as to form an angle of about 45°. The tube is now supported in an inclined position and one cubic centimetre of the urine, about sixteen minims in bulk, very accurately measured into it by means of a carefully graduated pipette. A drop of sulphuric acid is then added and the liquid evaporated in the tube at a gentle heat, a current of air produced by an aspirator being made to pass over the surface of the liquid. When this small quantity of urine has evaporated nearly to dryness, the fine end of the tube is hermetically sealed, a quantity of "soda-lime" is then introduced, and the mouth closed by a good cork carrying a V-tube containing a very little diluted hydrochloric acid. A strong heat is now applied to the mixture of urine residue and soda-lime, and the ammonia resulting from the decomposition of the nitrogenised organic matters driven off. All the nitrogen present in the cubic centimetre of urine is thus obtained in the form of ammonia, the latter being wholly condensed in the acid contained in the V-tube. At the termination of the operation the acid is washed out of the V-tube into a glass cylinder, neutralised with pure potash diluted up to a known bulk, and then treated with "Nessler solution," the well-known and extremely delicate colour-test for ammonia. The depth of the brown tint produced by the reagent measures the proportion of ammonia, and therefore of total nitrogen, in the quantity of urine taken for experiment. The value of the result of the colour test is very expeditiously obtained by having at hand a number of standard solutions of varying depths of tint for comparison. (Prof. Emerson Reynolds, p. 122.)

HYDROCELE.—*Injection of Carbolic Acid.*—Of the various injecting fluids proposed for the radical cure of hydrocele, tincture of iodine is most generally employed at the present day; but it often fails to produce the inflammation requisite for the obliteration of the sac, and occasionally induces too much inflammatory action. Dr. Levis, of the Pennsylvanian Hospital, prefers carbolic acid, and in a case of hydrocele, complicated with inguinal hernia, used as an injection, one drachm of a mixture of equal parts of carbolic acid and glycerine. The injection of carbolic acid seems, from other cases to which it has been applied, to fulfil the conditions most admirably, producing sufficient inflammatory action to secure adhesion of the walls of the sac, and giving little or no pain to the patient, either at the time of its introduction or subsequently. This freedom from pain is probably due to the local anæsthetic effect of the carbolic acid, for it is well known that if this article be placed upon the skin, the surface can be scarified with a knife without pain. (Philadelphia Med. Times.)

INCONTINENCE OF URINE.—*Hydrate of Chloral.*—Dr. E. Vecchietti relates five cases of this malady occurring in his own practice. All had been treated unsuccessfully; and all the patients recovered under the use of rather less than half a gramme (about 7½ grains) of hydrate of chloral, given in a little water in the evening; abstinence from drinks being at the same time enjoined. The effect was rapid, and in most cases permanent after taking the first dose. He explains the action of the chloral by supposing that the bladder is under the influence of two sets of nerves, one connected with the cerebro-spinal system and the other with the sympathetic; that incontinence of urine depends on irritation of the bladder at the same time that the sphincter is withdrawn from the action of the will; and that the chloral reduces the exaggerated excitability of the organ. (Brit. Med. Journal, April 25, p. 550.)

LITHOTOMY.—*Landing Net for Removing the Stone.*—The stone is often crushed during the removal by the forceps, it is more safely removed entire by means of a net. The net (of silk or canvas, according to the size of the stones) is made to slide on a curved wire, bent on the principle of midwifery forceps. After the cut has been made into the bladder, the net is introduced through the wound to the side of the stone or fragments; and, by gently tickling the stone and manipulating the net, the stone or fragments (coaxed in) are caught on withdrawal. These stones *plus* silk are the occupants of the perineal wound instead of stone *plus* forceps or scoop. (Mr. R. Davy, p. 190.)

STRICTURE.—*Mr. Teevan's New Urethrotome.*—A urethrotome ought to divide from before backwards, for if the stricture be capacious enough to permit an instrument to pass which cuts from behind forwards the indication for any operation is doubtful. Five years ago a great advance was made in the construction of the urethrotome by Professor Gouley, of New York, who *tunneled the vesical end of his instrument, so that it could be slid over and along the finest bougie already passed.* So far as I can ascertain, no English surgeon had ever heard of such a thing as a tunneled catheter or urethrotome, until it was sent to him from the other side of the Atlantic, and I consider that Professor Gouley's invention marked an era in the surgery of the urinary organs. He, for instance, has converted that dumb and consequently unsafe instrument which is called "Syme's staff" into *a conductor which tells the surgeon where it has gone to,* so that external urethrotomy can now be performed with a certainty hitherto unattainable, and also extended to desperate cases which were formerly beyond its reach. In the Lancet, for July 5th, 1873, I gave a description of a catheter with a conducting bougie founded on Professor Gouley's principle, but differing in some respects from his; and I shortly afterwards conceived the idea of adapting the vesical third of the instrument to the urethrotome, in order to endow it with safety and a more extended sphere of usefulness. The instrument is composed of a very slender olivary whalebone bougie (see woodcut, B), not so large as a No. ½, which is first of all introduced, or wriggled I would rather say, into the bladder apparently, when the catheter (A C) with a handle (G) is slid over and along the bougie (B), which emerges from the catheter through the slit which extends from the handle to the point (F). If the bougie have been passed successfully into the bladder, urine will of course flow from the end of the catheter; but if it should not do so, the catheter may yet be in the bladder, for the slit may have permitted some blood or mucus to block up the tube, and it is therefore necessary to pass the bougie through the whole length of the catheter to clear its interior. When it has been proved that the instrument is in the bladder, the knife (E D) may be slid along the catheter firmly and slowly, and the stricture divided. (Mr. W. F. Teevan, p. 186.)

Uræmic Convulsions.—*Blood-letting in.*—Mr. White, of Sunderland, relates briefly three cases of uræmic convulsions, all of which were relieved by venesection to several ounces from the arm. The first two were middle-aged men with renal disease, and who were attacked with convulsions; both recovered so quickly as to be able to leave the hospital in a few days. The third case was one of scarlatinal albuminuria, and in this case the convulsive attacks were so rapid and severe that chloroform had to be administered during the bleeding. The patient afterwards fell into a quiet sleep, the convulsions passed away, and he recovered. (Dr. Wm. L. White, Med. Times and Gazette, Sept. 19, p. 350.)

FRACTURES, DISLOCATIONS, AND DISEASES OF BONES AND JOINTS.

Anchylosis of the Hip-joint.—This operation, as performed by Mr. Adams, is most satisfactory in its results. All that is necessary is a long-bladed tenotome and a narrow-bladed saw with a good handle. The saw is three-eighths of an inch in width, and with a cutting edge an inch and a half in length. Mr. Adams describes his first operation as follows:—I entered the tenotomy-knife a little above the top of the greater trochanter, and carrying it straight down to the neck of the thigh bone, divided the muscles and opened the capsular ligament freely; withdrawing the knife, I carried the small saw along the track made, preserving this by pressure of the fingers straight down to the bone, and sawed through it from before backwards; the section of the bone was accomplished in five minutes. No hemorrhage followed, and I immediately applied a compress of dry lint retained in position by strips of plaster and a bandage; as soon as the bone was cut through the leg moved freely in all directions, but before it could be brought into straight position it was necessary to divide the tendons of the long head of the rectus and of the abductor longus muscles, and to cut through the tensor vaginæ femoris muscle. The limb was fixed in a straight position and bandaged to a long interrupted Liston's splint; no inflammation whatever followed the operation; no swelling or redness of the skin or any deep suppuration, but the wound healed slowly. (Mr. W. Adams, p. 138.)

Bloodless Operations.—All that is necessary for the performance of a bloodless operation on a limb is about three feet of india-rubber rope half an inch in diameter, and an elastic bandage two inches and a half wide and six yards long. To the ends of the india-rubber rope a couple of hooks should be fastened. Whilst the patient is being chloroformed the limb is to be bandaged from the toes upwards (supposing it to be a lower limb), the bandage being kept on the stretch whilst it is being applied, so that the entire limb is firmly and equally constricted. So soon as the anæsthesia is complete the india-rubber rope is applied close to the upper border of the bandage, being turned around the limb three or four times, and the ends hooked together, the metal hooks resting on the subjacent rubber, and not pressing upon the soft parts. If the rope be long relatively to the circumference of the limb it is always possible to graduate the constricting force sufficiently, and it is important to know that the amount needful completely to shut off the current of blood is not so considerable as one might *à priori* suppose. Esmarch uses a tube three quarters of an inch in diameter. When it is desirable to distribute the pressure over a larger surface the tube is preferable to the solid rope. If economy of space be an object, as in an amputation high up in the thigh, then the smaller sized rope possesses the advantage. In the operations upon the upper extremity, the male genital organs, or the fingers, a smaller-sized tube or rope should be selected. Before applying the rope an interval of a minute should be allowed for the compression to empty the limb completely of blood. The elastic bandage may now be unrolled. By these simple means it will be found that complete local anæmia is produced. The bandaging has driven, practically, all the blood out of the limb, whilst the circular compression above completely prevents any from admission during the time it remains applied. The limb thus treated appears of waxy pallor, and the temperature becomes greatly reduced. The wound may be plugged before removing the constricting rope, and no bleeding takes place; but after amputation or excision it is impossible thus to secure all the bleeding points, and after securing the principal vessels the elastic rope must be removed before closing the wound. Possibly this method of Esmarch may prove useful in the treatment of certain aneurisms. We know now how readily aneurisms may often be cured in a few hours by the complete arrest of the flow of blood through the sac. For instance, in a popliteal and femoral aneurism we might easily and perfectly arrest the current of blood, and if the limb were previously, to some extent at least, if not completely, emptied of blood, the aneurismal sac would be allowed the opportunity of contracting in size, which would certainly prove a powerful adjunct to the compression in furthering a cure. (Mr. W. MacCormack, p. 134.)

Depressed Fracture of the Skull.—It is not necessary to operate in a case of simple fracture of the vault of the skull, with depression of bone but no symptoms of compression, unless the bone is driven in edgeways. Much importance is laid upon the question of whether the fracture be simple or compound in standard works on the subject. I think too much stress has been put upon this point. That it should exercise a certain influence is, of course, perfectly right, for it is not a light matter under any circumstances to convert a simple into a compound fracture, least so when the skull is concerned. But when, on the other hand, the advantage which may be gained by a successful operation is considered, and the imminent peril in which the patient is placed in certain cases if no operation be undertaken, I think there can be no doubt that the right course to pursue is to cut down upon the bone, and explore. The greatest difference of opinion exists perhaps as to the right treatment to be pursued when there are symptoms of compression, as coma, but without clear evidence of depression. I agree in the main with what Mr. Erichsen has said on this subject—that when such symptoms exist, in all cases of doubt, an incision should be made down to the bone, and the state of the skull examined. Further proceedings will depend almost entirely upon the condition of the skull when thus laid bare. There is one form of fracture in which the rule is constant to trephine at once. This is the punctured fracture, in which the inner table is usually much comminuted. It is of no consequence whether or not there be immediate symptoms of compression; the operation is not performed on account of these, but in order to prevent, if possible, the irritation and inflammation almost sure to be set up by the small and often sharp splinters which are formed. (Mr. W. S. Savory, p. 139.)

Dislocation of the Forearm Backwords.—*A Simple Method of Reducing.*—Dr. Alexander Murray writes to the New-York Medical Record that he has reduced five cases of the above-mentioned dislocation by the method to be described. Supposing the dislocated arm to be the left. Dr. Murray takes his position at the outside of the dislocated arm, and places the palm of his right hand to the palm of the patient's left, dovetailing his fingers between each of the patient's. In this way, a firm hold is secured for extension. He then places his elbow as a fulcrum and for counter-extension on the forearm in front and against the lower end of the humerus, and by a steady pressure downwards and backwards, and at the same time flexing the forearm towards the shoulder, in a few minutes the luxated bones slip into their natural places. Other dislocations of the elbow can be reduced by the same method. (Med. Press and Circular, Aug. 19, p. 162.)

Elastic Ligature.—The use of the elastic ligature is much facilitated by the employment of an ingenious instrument devised by Mr. Allingham. It consists of a mounted curved probe with a concealed notch. A blunt or sharp point can be used with the probe at pleasure. It will be understood at once by reference to the woodcut at (p. 171.)

A Substitute for the Elastic Ligature.—Dr. Hollis describes an instrument which he calls "The Sarcotome," and which is intended as a substitute for the elastic ligature. The instrument consists essentially in substituting, as a cutting apparatus, a spiral steel spring and a waxed thread for the ordinary caoutchouc tubing, which has hitherto acted as an elastic ligature. (Dr. Hollis, p. 171.)

Guard for the Points of Hare-Lip Pins.—It is not a good plan to break or cut off the points of pins used in hare-lip or other plastic operations, because if the pin is strong the force necessary is sufficient to disarrange the neatly and accurately adjusted edges of the wound, and also a rough edge is left which renders their withdrawal more difficult and painful. I have lately devised a simple contrivance, which I think of service in such cases. I call it a needle guard. It consists of two little plated tubes, each three-quarters of an inch long, and open at one end. The tubes are tied together with a piece of string elastic, or better still, with a vulcanised india-rubber ring, sufficiently extensible to allow the guard to be easily slipped over the two ends of the needle. The guard does not interfere with the twisted suture or skin and can be at once removed, without the slightest difficulty or dragging, when the needle is about being withdrawn. (Mr. H. J. Tyrrell, p. 176.)

VENEREAL AFFECTIONS.

Gonorrhœa.—*Hydrastin.*—As far as internal treatment is concerned, I merely give in the first stage a saline aperient, to be continued three times daily for four or five days, together with the following injection:—Hydrastin, one drachm; solution of morphia (Magendie's), two drachms; acacia mucilage to four ounces: to be used three times daily. This I have employed when inflammation ran very high, without even the slightest ill effects, and have used it in every stage of gonorrhœa with the most beneficial results when every other treatment, both internally and locally, had failed, including red sandal oil. But there is one remark I wish to make regarding the use of injections which medical men generally forget, and that is, to tell their patients to micturate previous to its use. Unless this is done, injections in gonorrhœa are useless. Hydrastin is used very much in different parts of the United States, and very successfully. (Mr. J. N. Bredin, Lancet, August 15, p. 259.)

Gonorrhœal Ophthalmia of one Eye.—*A Protective Bandage for the Other.*—Some protection for the sound eye is absolutely necessary in cases of gonorrhœal ophthalmia of one eye only. A most efficient one may be made from a small square piece of macintosh into the centre of which a watch glass is fastened. The macintosh is trimmed to fit the nose and forehead, and is fixed by means of adhesive plaster. (Mr. F. Buller, p. 198.)

Psoriasis.—Syphilitic psoriasis is easily treated. Small doses of perchloride of mercury, with or without iodide of potassium, are the most useful, along with the local application of a 5 per cent. solution of oleate of mercury. Dr. Hughes Bennett used to teach that arsenic internally and pitch externally would cure any case of psoriasis in six weeks. Many cases of psoriasis are intolerant of the action of pitch. In certain persons, and in particular stages of the disorder, the remedy proves too irritant; and, again, arsenic, even in the smallest doses, cannot be borne by some patients. Hence, in many instances, the employment of pitch has to be carried out in a modified form. I have a high opinion of the value of the application in the majority of cases. If pitch ointment is objected to, some of the tarry oils, or carbolic acid, may be substituted; and the odour may in some degree be covered, as Dr. McCall Anderson has shown, by the oil of lemon-grass (citronella) or by rosemary. The tarry preparations, and all local remedies indeed, should be only applied to the affected spots, and with as diligent friction as can be borne. The linimentum picis comp. is a favourite application at St. Bartholomew's Hospital; and is composed of equal parts of pitch, soft soap, and rectified spirit of wine. It is best laid on with a painter's brush, or with a piece of flannel. Warm alkaline baths are of much use, not less frequently than twice in the week; and, if the patches will bear it, they may be effectually cleansed and prepared for fresh inunction by friction with soft soap and pumice-stone. It will be found, however, in many cases, that this local treatment is resented, and this is to be looked for in the early stages of the disorder, when the patches are small and hyperæmic, and when fresh spots are still appearing. Irritant treatment is inapplicable to this condition, and, instead, it is proper to employ simple inunction with olive oil, almond oil, or spermaceti ointment. Warm rain-water baths and a lather of warm gruel or decoction of starch are also preferable to alkaline baths. Few remedies exceed in value the employment of lemon-juice locally in obstinate cases of palmar psoriasis. The part should be rubbed with a piece of freshly-cut lemon several times a day. It is often difficult to prove the exact nature of chronic palmar psoriasis. Many cases are doubtless of syphilitic nature, but many are quite uninfluenced by anti-syphilitic treatment. Lemon-juice may be tried in all chronic and unyielding cases. (Dr. Dyce Duckworth, p. 205.)

SYPHILIS.—*Subcutaneous Injection of Mercury.*—The best solution for subcutaneous injection of mercury is one of three grains of the bicyanide of mercury to the ounce of water, to which a little glycerine has been added. This is less irritating to the tissues than any other preparation. The following are the advantages of administering mercury in syphilis by subcutaneous injection rather than by the mouth:—1. The certainty and rapidity with which the symptoms disappear. 2. The small quantity of mercury necessary. 3. Exactness in the measurement of the dose. 4. Impossibility of disappointment through patients neglecting to take their medicine, &c. 5. Absence of gastric and intestinal irritations. 6. Economy in hospital use. 7. The avoidance of the publicity involved in using baths. 8. The means it affords of rapidly affecting the system in certain grave complications. (Mr. C. J. Cullingworth, p. 216.)

There are two principal causes of irritation attending the subcutaneous injection of the sublimate: (1) the known acidity of the solution, and (2) the property it possesses of coagulating the albumen of the tissues. To obviate these inconveniences, Dr. Staub proposes to adopt a modification of Mialhe's "normal solution of mercury," which is said to be a solution of the sublimate in that form of combination into which all mercurials enter before they act on the system. It consists in adding to a simple solution of the bichloride in water, small quantities of the chlorides of ammonium and sodium and the white of an egg. This solution, Dr. Staub says, is free from acidity, and will not coagulate albumen. It will, therefore, pass directly into the circulation without the formation of a coagulum at the seat of injection; and the delay and irritation due to the process of re-dissolving will be avoided. Forty-four cases of constitutional syphilis are appended, in forty-two of which a cure was effected very rapidly. The average number of injections given to each patient was thirty-four, and the total quantity injected a little under two grains and a half. Mr. Cullingworth having obtained a supply of the solution prepared according to Staub's formula, proceeded to test its effects. The usual dose employed was that recommended by Staub—namely, five milligrammes (one-fourteenth of a grain) of sublimate in a gramme (fifteen drops) of fluid. The injections were generally given every morning, either in the upper arm or in the gluteal region.

Fifteen of the cases were suffering from constitutional syphilis, and all these had some form of syphilitic eruption. In addition to the cutaneous syphilide, two of them had iritis, and one had gummous tumours, as large as an almond, situated in the substance of the back part of the tongue, which had been in a stationary condition for some months. In every instance the rash disappeared very quickly, the average time being eleven days. The cases of iritis were cured, one after seven and the other after eighteen injections, without any symptom of mercurialisation. The tumours of the tongue had entirely disappeared in ten days. The average quantity of sublimate required to produce slight tenderness of the gums was about half a grain; and in one instance slight salivation was produced after injecting two-sevenths of a grain. The pain caused directly by the operation was in every instance inconsiderable. The punctures were *always* followed by a certain amount of induration, which had not become absorbed when the patients left the hospital. (Mr. C. J. Cullingworth, p. 214.)

Dr. Lewin, of the Charité Hospital, Berlin, has published some observations upon this subject, based on 700 cases. He used a simple solution of the bichloride in water (about four grains to the ounce), adding a little glycerine and morphia in the case of patients with a sensitive skin. Fifteen drops (one-eighth of a grain) were usually injected daily, sometimes in the side of the chest, and sometimes below the shoulder-blade, or on the outer side of the arm. It was exceedingly seldom (only in 2 or 3 per cent of the cases) that he had to contend with local accidents of any importance—as, for instance, abscesses or sloughing of the overlying skin, and even then he attributes them to the clumsiness of the operator. Fifteen or sixteen injections, involving a total quantity of about two grains of sublimate, were generally sufficient to cause the symptoms to disappear; and he affirms that the relapses were considerably fewer than after ordinary mercurial treatment. His book concludes with a short statement of the advantages of the method:—1. Rapidity of cure (proportional to the quantity injected daily). 2. Comparative infrequency and lessened gravity of a relapse. 3. Precision as to dose. 4. Facility of administration. 5. Freedom from irritation of the alimentary canal. (Dr. G. Lewin, p. 214.)

Tertiary Syphilis.—It is generally admitted that parents suffering from tertiary syphilis beget strumous offspring—which is but saying that the syphilitic poison is not sufficiently strong to reproduce itself, but has vitiated the blood sufficiently to determine the production of a strumous stock; and thus struma (rightly, as it seems to me) comes to be looked upon as a sort of bastard syphilis, or, better, as the quaternary form of the disease. The formula commonly adopted is that mercury is the remedy for secondary syphilis, particularly for the earlier manifestations, mercury and the iodides for late secondaries, and the iodides alone for tertiary syphilis, mercury being positively baneful. I venture distinctly to dispute the accuracy of this formula, on the ground of practical experience, and to affirm that, except perhaps in cases of extreme bone-mischief, mercury may be so administered as not in any way to impoverish the blood or injure the constitution, but with the sole effect of acting as an antidote to the syphilitic virus. The mode of administering the mercury is important. The internal exhibition of the drug is frequently ill borne, but either the mercurial vapour-bath or wearing a mercurial belt answers very well. Of the two, the belt is the most uniformly successful in these cases, as exhausting sweating sometimes follows the use of the bath. Neither inunction nor subcutaneous injection are admissible; indeed, I regard the latter plan from pretty extensive experience as eminently objectionable, being liable, in spite of the favourable testimony of Lewin and others, to produce alarming constitutional symptoms and troublesome local sloughing. I have also found that cases of secondary syphilis, treated with the subcutaneous injection, are (probably from the small quantity of mercury employed and the very rapid *apparent* cure) more prone to relapses than cases treated with mercury on the other plans. (Mr. S. M. Bradley, p. 217.)

Venereal Warts and Condylomata.—Mr. Berry relates a case in which he unsuccessfully tried the use of various escharotics, including fuming nitric acid. Almost despairing of being able to rid the patients of these pests, I resolved to try the acid nitrate of mercury (liquor acidus hydrargyri nitratis), though with little faith in its efficacy, after having failed with nitric acid. In both cases (females) the warts grew on the perinæum, around the arms, and on the skin and mucous membrane of the labia majora. I oiled the parts around and applied the acid nitrate of mercury freely, by means of a firm pledget of lint, intending to do so again daily if required. Next morning, however, to my surprise, the warts had become much shrunken, and appeared to be covered with a yellowish white slough; the patients complained of feeling very sore, and had been pained since the application. Poultices of linseed-meal were now applied, and when the parts were cleaned, the warts had almost completely disappeared (a second application removing them), and the skin where they had been was quite healthy. In some cases, where the warts are one large granulating mass, giving forth an offensive discharge, removal with the *écraseur* will be required; but in those cases where they cover a large surface, the application of the acid nitrate of mercury will be found to be the best remedy. What part the mercury plays in its caustic or escharotic properties, I am unable to say, but certain it is, that the remedy is superior to strong nitric acid. (Mr. W. Berry, p. 219.)

AFFECTIONS OF THE SKIN, &c.

Chronic Eczema.—*Carbolic Acid Lotion.*—In cases of chronic eczema, attended with much irritation and itching, the part affected may with advantage be first cleansed with carbolic acid soap and tepid water, in which is dissolved a little carbonate of soda, and then the following lotion applied by means of a sponge. Carbolic acid, one drachm and a half; glycerine, half an ounce; water, six ounces. In a case which had lasted for many years, and had been unsuccessfully treated with arsenic and zinc ointment, and with many other remedies, the affection had entirely disappeared in two months under the plan of treatment recommended. In another case it was found that the lint stuck so tightly to the eczematous patches, owing to the amount of exudation, that the act of pulling it off irritated the skin. In this case an ointment of ungt. zinci, with carbolic acid and chloroform, aa min. xx. to ℥ j. was applied, and the lotion, after a day or two, used as before. Under this treatment the disease gradually progressed until recovery was complete. (Dr. J. G. Thornley, p. 199.)

Erysipelas.—*Subcutaneous Injection of Carbolic Acid.*—It appears not improbable that erysipelas is the result of the entrance of minute organisms into the subcutaneous connective tissue and of their multiplication. Acting upon this idea, the experiment has been tried of injecting subcutaneously a one per cent solution of carbolic acid into places around the disease. It was found that the erysipelas did not spread in the direction of the part where the injection was made, and the fever and frequency of the pulse were at the same time reduced. (Dr. Aufrecht, p. 200.)

Camphor.—M. Revillout states that he has several times had occasion to employ with good effect in erysipelas an application used by M. Delpech at the Necker. It consists in painting the affected surface with a solution of camphor in ether (equal weights); and when this is employed in erysipelas of the face, and the affection has not yet reached the hairy scalp, its progress is usually arrested. It is also very useful in erythema, caused by local irritation. (Gazette des Hôpitaux, June 20.)

Exophthelmic Goitre.—*Belladonna.*—Two cases of exophthalmic goitre are related, in both of which the distressing symptoms of the disease were fully developed, in which, after complete failure of other treatment, belladonna gave relief. The most probable theory of the disease is, that it is a paralysis of the cervical sympathetic, and the trial of belladonna was suggested by the statements of Dr. Harley and Dr. Meryon that belladonna is a stimulant to the sympathetic. The belladonna was given in doses of five drops of the tincture every hour, afterwards reduced to fifteen minims four times a day, and afterwards iron was added. The relief of the palpitation, of the quick, throbbing pulse, and of the profuse perspiring was, so to speak, immediate. The patient was restored to comfort and ease in a fortnight. Amelioration in other respects was gradual, and is still progressing. The diplopia was removed in six weeks. It was quite two months before decided improvement in the exophthalmos could be reported. (Dr. R. T. Smith, p. 203.)

Freckles.—For the benefit of young persons afflicted with freckles, it may be stated that powdered nitre moistened with water, applied to the face night and morning, will soon remove all traces of them. (Druggist, Feb., 1874.)

Favus.—Favus is a tedious affection, requiring patience on the part of the person suffering, and great painstaking with the medical attendant; but the following treatment will be successful :—In the first place, examine some of the crusts under the microscope to ascertain if any mycelial threads or fungous elements of the Achorion Schönleinii can be detected. If so, then adopt the following plan :—Take a very small pair of scissors, which will detach a crust or scab and leave a raw exuding surface; cut all the hair close to the skin—there is no necessity to epilate, as advised by some. Having obtained one raw surface, make a determination to cure that spot; wash it clean with a lotion of carbonate of potash (one drachm to three ounces of rose water); than dry with a piece of lint, and paint it afterwards with the following solution—viz., nitrate of silver, one scruple; spirit of nitric ether, half an ounce. Now this is the plan which must be adopted:—Each day a fresh spot attacked and cured; and if a spot that has been treated on a former day exudes any moisture, paint again with the nitrate-of-silver solution. The child should wear a skull-cap of linen rag wet with the alkaline solution, covered with oil-silk during the day. Great cleanliness is necessary. Internally, good food, with liquor arsenicalis, and a purgative, such as calomel and jalapine, every other morning. Whilst administering the purgative, watch the secretions to see that they are healthy. Without it there is no utility in trying local treatment. (Dr. John Swift Walker, Lancet, Sept. 19, p. 436.)

Poultice twice a day with linseed-meal, having previously mixed it with the froth of porter (this will effectually remove the scabs in a few days); wash twice a day with an alkaline lotion; dry perfectly; then apply iodide-of-sulphur ointment twice daily, regulating the strength according to circumstances, and keeping the head covered with oil-silk. Internal treatment, if scrofulous, cod-liver oil; if not, give (Donovan's solution) liquor arsenicalis and hydriodate of mercury. Epilation I do not think is of any real benefit, as the disease does not originate from the hair-bulbs. I have seen it in two instances on the trunk. Cutting the hair very close is advisable and necessary. Give a seidlitz powder twice every week. (Mr. J. N. Bredin, Lancet, Sept. 19, p. 436.)

Onychia Maligna.—*Nitrate of Lead.*—The application of dry nitrate of lead to the malignant sore, night and morning, is productive of the happiest results in this painful disease. This treatment, originally recommended by Mr. Mac Cormac, is favourably illustrated by some cases treated at Charing Cross Hospital. (Mr. F. Clarke, p. 209.)

Psoriasis Inveterata.—*Meat Diet.*—In a case of inveterate non-syphilitic psoriasis it is worth while trying the effect of a completely meat diet, as recommended by Dr. Passavant, of Frankfort. He had himself suffered for twenty-five years, from psoriasis, and had vainly tried every possible remedy, but was completely cured at last by this plan. Dr. Parkes relates a similar case. (Dr. E. A. Parkes, p. 113.)

Tinea Tonsurans.—The following plan will be found useful. A margin of healthy hair is to be cut short or shaved round the patch. A brisk rubbing with the ol. picis rect. or some similar hydrocarbon is the next stage, and the reddened and saturated patch is to be thickly dusted with a powder composed of tannin, iodine, and gum arabic. This is to be moistened with a few drops of the oil, and gently but firmly pressed into the skin with the end of a small cork. Repeat the process till the whole patch is covered with a layer of paste about an eighth of an inch thick, and then allow it to dry. The firm hard scab thus formed may be left undisturbed for three or four days, when it should be moistened, scraped off, and reapplied. No home dressing is required in the intervals. This mode of treatment is not easily applied to patches of more than about an inch in diameter, as the artificial scab is apt to crack and fall off in pieces. The advantages of the method are the long interval between the applications contrasted with what can be had with any evaporable dressing in common use; the absence of irritation; the prevention of auto-inoculation by combing, &c., owing to the solid roof formed over the fungus; and the avoidance of bandages, pads, impervious night-caps, or other easily disarranged contrivances. (Mr. E. A. Browne, p. 208.)

VARICOSE ULCER OF THE LEG.—Mr. Hamilton, of Louisburgh, Ireland, relates a case of obstinate varicose ulcer of the leg which showed no signs of healing after prolonged rest and careful strapping, along with other local treatment. With the aid of a lancet he removed about a drachm of blood locally from the immediate neighbourhood of the ulcer, and repeated this on a second visit with the effect of the ulcer completely healing, simply by removing the local congestion. (Mr. C. W. Hamilton, p. 204.)

AFFECTIONS OF THE EYE.

CATARACT.—*Opening the Capsule before Making the Corneal Section.*—There are great disadvantages in the present way of operating, especially that directly the corneal section is made the aqueous rushes out, the cornea collapses, and the pupil contracts, however well it may have been dilated previously, and the cystotome has then to be introduced and the capsule lacerated. It is much better to lacerate the capsule before making the corneal section. The method of operating is as follows:—If the patient be not under the influence of an anæsthetic it will be possible, by fixing the eye in the manner employed in ordinary discission operations, to dispense with the use of the speculum and fixing forceps during the first step. It is an advantage to do without the fixing forceps if possible, as there is then less likelihood of an escape of aqueous humour on withdrawing the needle. There is nevertheless an advantage attending the use of the fixing forceps—viz., that the needle can be used with more freedom and precision. The pupil should have been previously fully dilated by atropine. The needle used should be slightly curved near the point, and should be the finest possible in the shank. It is entered very obliquely at the lower and outer quadrant about 1''' from the corneal margin. Its point is then pressed against the centre of the capsule, and a puncture made with a view to ascertain the consistency and nature of the cortex. This done, the operator decides whether to remove the cataract in its capsule or not. If he decides to lacerate the capsule, the point of the needle is carried round the upper and inner margin of the lens with a semicircular sweep, and then across the lower and inner margin with a second sweep, the two semicircles being joined above and below by separate movements of the needle if necessary. It is then withdrawn slowly and carefully; and if its passage through the corneal layers has been sufficiently oblique, there will be no loss of aqueous humour, and the pupil will remain dilated as before. If, however, aqueous has unavoidably been lost, the operation had better be completed on the following day, or even a week later. (Mr. W. S Watson, p. 195.)

CORNEA AND IRIS, &c.—*Suppurative Affections of.*—In suppuration of the cornea and iris which do not yield to atropine and opiates, incise the cornea directly through the medium part into the anterior chamber, just as you would do in a case of whitlow or thecal abscess. The patient having been put under the influence of an anæsthetic, an incision in length about one-third of the diameter of the cornea, and penetrating the anterior chamber, is made by Graefe's knife. The incision should be made *not valvular*, but *vertical to the curve of the cornea*, traversing "in its longest diameter (Bader)," any abscess or specially diseased portion of cornea, and tending towards the pupillary portion of the cornea, where the risk of prolapse of the iris will be least. When the site of direction of the incision is not determined by a specially damaged spot, it is better to carry it across the middle of the cornea, slightly *above* the centre of the pupil. This suggestion to avoid the centre of the pupil is made, because I have not yet been able to ascertain whether an incision such as I have described can be made across the centre of the healthy cornea without impairment of vision. (Mr. T. P. Teale, Ophthalmic Hospital Reports, Oct., p. 62.)

INTOLERANCE OF LIGHT OCCURRING IN SYPHILITIC CORNEO-IRITIS.—The croton chloral hydrate is a remedy of great value in relieving photophobia, but from the experience gained in treating a number of cases with it, it appears that only young people and only those suffering from genuine syphilitic corneoiritis are benefited by it. The best dose is between five and ten grains, three times a day, although in one case twenty grains was given four times a day, without producing much good or any bad symptoms. (Mr. Bader, p. 197.)

LACHRYMAL FISTULÆ.—*Injection of Iodine.*—In a case of fistulæ of the lachrymal sac, resulting from an abscess, pure tincture of iodine was injected by means of one of Anel's syringes. Inflammation of the internal membrane of the sac, extending to the conjunctiva, was the result. Fomentations with a solution of borate of soda were applied, and complete cure was effected in the space of four or five days. (Dr. del Toro, p. 197.)

PANNUS.—*Turpentine.*—Dr. Chisholm reports the following case:—A man, thirty years of age, was the subject of a dense vascular pannus in the right eye, which had been subjected to all the recognised modes of treatment, not excepting peritomy, without success. Dr Chisholm prescribed the following drops, to be used once daily:—Oil of turpentine, one part; olive oil, two parts. After the first instillations, decided improvement was manifested; day by day the cornea became paler, by reason of atrophy of the pannus, until after some weeks it became possible to distinguish the colour of the iris and the contour of the pupil. By perseverance in this plan of treatment, the patient so far recovered that it was scarcely possible to discover which eye had been affected. (Richmond and Louisville Medical Journal.)

TRICHIASIS.—*The operation of Repositio Ciliorum.*—The principle of the operation consists essentially in causing the offending eyelashes to be mechanically turned away from the eye, and made to grow more or less in the proper direction by making them pass under a narrow bridge of skin. The following is the method of performing the operation:—A very fine curved needle has the two extremities of a very fine waxed silk ligature (or hair, as Celsus directs) passed through its eye. The needle, being firmly grasped by suitable forceps, is then passed through a narrow fold of skin at the very margin of the lid, close to one of the inverted eyelashes. The point of introduction should be external to the point of emergence of the eyelash, but as close to it as possible; and the needle should be brought out after passing about ½''' or 1''' under the skin. The needle and ligature should be drawn through until a small loop alone remains, when, by means of a fine pair of forceps, the eyelash is passed through the loop. Traction is then made on the ligature, and the loop with entangled eyelash, is drawn through the tunnel of the skin. The other misdirected eyelashes are similarly treated. The chief difficulty in the performance of the operation consists in getting the eyelash entangled in the loop of the ligature, as the bleeding which occurs from the points of puncture causes the eyelashes to be matted together, or to adhere to the ligature, and the misdirected eyelash is almost always enveloped by a small clot. When this source of annoyance is troublesome, it is advisable to wait a minute or two after the passage of the needle before proceeding to the ensnaring of the eyelash. In some nervous patients, I have found it advisable to introduce the lid-forceps or clamp, so as to stretch the lid and enable it to be more readily fixed, and thus ensure accuracy in the points of introduction and emergence of the needle. One thing that must be carefully attended to is to make the point of introduction of the needle as close to the offending eyelash as possible, as, if it be made at a little distance, the resiliency of the hair causes it gradually to emerge from the tunnel and resume its former position. This operation is, unfortunately, only applicable to those cases of partial trichiasis in which the eyelashes inverted are few in number and of considerable size. (Dr. D. A. Robertson, p. 198.)

MIDWIFERY, &c.

Fibrous Tumour of the Anterior Lip of the Uterus.—*Removal by the Galvanic Knife.*—Dr. Atthill relates a case of removal by the galvanic knife of an ovoid tumour the size of a hen's egg projecting from the vagina, but really growing from and being as it were part of the anterior lip of the uterus. The apparatus employed was Grenet's. The galvanic knife consisted of a loop of platinum wire about half an inch in length, connected by means of the ordinary wire conductors with the battery. The cervix measured at the point selected for amputation 3½ inches in circumference. The great thickness of the tissue to be divided, and its extreme deneseness, rendered the operation very tedious; it occupied in all thirty-five minutes. The slow progress made in dividing the tissues was also in no small degree due to the vascularity of the part, the flow of blood on each stroke of the knife being so considerable as to cool the platinum wire to such a degree, that ten or fifteen seconds frequently elapsed before the knife was hot enough to be again used. The cauterization was, however, sufficient to prevent any serious hemorrhage occurring; still two arteries had to be ligatured. Excepting what occurred from these two vessels, the cauterisation effected by the knife was sufficient to check the hemorrhage, nor was there any subsequent loss of blood. The plan, however, was not entirely satisfactory, on account of the great length of time which it occupied (35 min.), which more than counterbalanced the advantage obtained in lessening the risk of hemorrhage. The smell, too, produced by the slow cauterization was most disagreeable. (Dr. L. Atthill, p. 243.)

Hysteria.—*Phosphorus.*—It seems probable that phosphorus will prove a remedy of considerable value in cases of hysteria, which are indeed really cases of nerve depression. The proper dose is about one-twelfth of a grain of phosphorus, dissolved in cod-liver oil, or in alcohol and glycerine. This medicinal treatment should be supplemented by such general treatment as the case may require. (Mr. J. A. Thompson, p. 52.)

Induction of Premature Labour.—The old plan of puncturing the membranes and then giving ergot is most unsatisfactory, inasmuch as it is reversing the process of nature. We ought to dilate the os first, and this can only be effected by tents of sea tangle or compressed sponge, and Barnes' india-rubber bags. My experience leads me to prefer the tents, and the following is the manner of inserting them. The patient being in the ordinary obstetric position, the fore and middle fingers of the left hand, well oiled, are to be passed up to the os uteri externum, which is generally sufficiently open to admit the point of one, and sometimes even of both fingers. A small-sized sponge-tent, about the size, for instance, of an ordinary radish, is to be mounted on a proper stilette, made for the purpose, and passed along the groove between the fore and middle fingers of the left hand, until its point is inserted into the os uteri. The tent is then to be pushed on until a very little of it, not more, perhaps, than a quarter of an inch, projects into the vagina beyond the os uteri. If the os be so high that it cannot well be reached by the finger, the tent may be inserted through a full-sized tube speculum. If also it be very little open, a tangle-tent may be found more convenient to begin with. Care should be taken to push the tent up sufficiently far, as it should be remembered that, two months or so before delivery, there is often a considerable interval between the os uteri externum and internum; otherwise the tent may not pass through the os internum. After the tent is introduced, a piece of soft silk handkerchief may be passed up as a plug to keep it *in situ.* On the day following, this tent should be removed and a large one inserted, and on the next day a tent of the largest size. Generally two, or at most three, tents are required to complete the full dilatation. At this time, probably labour-pains will set in regularly, and the membranes will rupture. Should this not be the case, the membranes may be punctured, and the most convenient instrument for this purpose I have found to be a gum elastic male catheter, of which the end has been cut off, so that the stilette can be protruded at pleasure. Should the pains still be weak or ineffectual, ergot may be given. Before it was the custom to impregnate sponge-tents with carbolic acid, they used to become very offensive if left in the vagina more than ten or twelve hours, and there was some risk of septicæmia in consequence. I, therefore, never was accustomed to leave a tent *in situ* more than twelve hours. In this time, however, the tent will not dilate to its full extent. I now always leave each tent twenty-four hours *in situ*, and I do not find that there is any risk of septicæmia when carbolised tents are used. On the whole, I prefer carbolised sponge-tents very much to the elastic bags, because they effect the process of dilatation more steadily, continuously, and gradually, and therefore imitate more exactly the natural process of dilatation, which frequently occupies several days from its first commencement. As a general rule, it is not desirable to dilate the os too rapidly, especially when the time for that operation falls considerably short of the full term, for then there is a proportionally greater thickness of the os uteri to overcome. (Dr. J. G. Swayne, p. 220.)

INTRA-UTERINE STEM PESSARY.—Dr. Clement Godson, of the Samaritan Free Hospital, uses an intra-uterine stem made entirely of aluminium, and so light that, when placed on the palm of the hand at some distance from the mouth, it can with very little effort be blown off it. This extreme lightness causes the instrument to have but little tendency to get displaced. But should this arise, a spring is pushed up the canal of the stem, and expands through two lateral apertures near the top of the stem, so fixing it in position. The use of this, however, is rarely required, and is to be avoided if possible. (Dr. C. Godson, p. 244.)

OVARIAN DROPSY.—*Diagnosis.*—In the diagnosis between ovarian dropsy and the other conditions which resemble it, all the senses must be used in obscure cases. By the uterine sound much can be learned, as well as by vaginal and rectal digital examination; but, of all these, palpation and percussion afford the most valuable information. By passing the hand over the abdomen, the presence of a tumour is ascertained, also whether it is solid or fluid, or partly the one and partly the other; whether it is movable or immovable, smooth and regular in its outline or the reverse; but, by percussion, it must mainly be decided whether swelling is the result of ascites or of ovarian disease, or caused by tympanites, or by a phantom tumour. In ascites, the stomach and intestines, containing air, float on the surface of the fluid, and, therefore, the highest points of the tumour, the patient lying on her back, give out a clear sound on percussion. If, however, the fluid be contained in a cyst, the stomach and intestines are pushed aside, as the tumour rises in the abdomen, and lie in the epigastric and two lumbar regions. Hence, the highest points of an ovarian tumour emit a dull sound when percussed, and the epigastric and lumbar ones give a clear sound. By applying these general rules in any ordinary case, a few seconds will enable a surgeon to clear up all doubt. The abdomen in ascites may be so distended that the intestines cannot float on the surface, or the intestines may be tied down by adhesions, the result of peritonitis, probably of a tubercular, and possibly of a malignant character, and itself the cause of the ascites. Such conditions might without care lead to errors in diagnosis. There is a condition, however, to which Mr. Wells does not allude, but which is mentioned by Peaslee, which is a most invaluable means of diagnosis. This is a prolapse of the posterior wall of the vagina, from the pressure of the fluid in Douglas' space. It is the upper portion of the posterior wall of the vagina that is prolapsed, the part covered by the recto-vaginal pouch of the peritoneum. It is easily distinguished from the tumour formed by prolapse of the lower part of the vagina known as a vaginal rectocele, by passing the finger into the rectum and thence into the pouch from which the tumour receives its name. We have scarcely ever seen a woman whose abdomen was much distended by ascites in whom this prolapse had not occurred. It is also found where there is an enlarged ovary or other tumour surrounded by ascitic fluid, but never in cases of simple ovarian or other tumour. (Mr. Spencer Wells, Dr. Peaslee, p. 245.)

POST-PARTUM HEMORRHAGE.—If the placenta is removed, or, to put it in another way, if the uterus, with a little assistance, is caused to expel the placenta immediately after the birth of the child, we considerably diminish the risk of post-partum hemorrhage, and should it set in, we have the uterus more immediately under our control. *Immediately* on the birth of the child the uterus is to be firmly grasped and pressed downwards in the axis of the pelvis, and the right index finger being hooked on to the edge of the placenta, which is invariably in the vagina, with a gentle rotatory movement it can be extracted. It is not right to teach that we should wait for a griping pain or two to effect the expulsion of the afterbirth. These so-called griping pains should only cause the firmer contraction of the womb *after* the expulsion of the placenta. (Dr. Blennerhassett Atthill, p. 236.)

Arrest of Post-partum Hemorrhage by Vomiting.—Vomiting is a powerful agent in stopping post-partum hemorrhage. This may arise from the vascular sympathy which exists between the uterus and the stomach. Firm contraction of the uterus generally occurs after vomiting, and so much so is this the case that it is well to use common mustard as an emetic. (Dr. Ringland, Dublin Journal of Med. Science, May.)

Perchloride of Iron.—We ought not to have recourse to this remedy unless it is urgently required, as other modes of treatment are safer, and, generally speaking, more effectual; but cases may occur in which ordinary modes of treatment prove unavailing, and in these we may grasp at the perchloride as a dernier ressort. (Dr. E. Kennedy, p. 235.)

[We are surprised to find no allusion in these cases to the plug. Why be afraid of using the plug in uterine hemorrhage? We have had the most fearful cases of hemorrrhage, but never remember to have lost one. Our practice is very simple. Clear out the placenta and all clots, run the fingers up the outside of the uterus so as to grasp the fundus, pushing all folds of intestine upwards for fear of injuring them. Pull the fundus downwards whether it will contract or not, now plug the vagina *right well* so that no blood can possibly escape. What is the result? You have the fundus uteri well down, you have stopped up the opening below,—you cannot have a coagulum much bigger than two fists. This very coagulum acts as a plug in the womb; the *bleeding vessels cannot bleed through a coagulum.* You have thus effectually plugged the bleeding vessels and can wait; but you must keep your hand, or rather fingers, well grasping the fundus, else the womb may dilate again. In a little time, one, two, or more hours, remove the plug from the vagina, press out the coagulum from the womb and see if hemorrhage begin again, always giving, as soon as possible, a large dose of ergot. We think the ergot is given in far too small doses; we generally give a half-ounce bottleful of the powder well infused, or two drachms of the liquid extract. We consider all the prejudices against the plug perfectly unworthy of notice. Of course if the hemorrhage return, we plug a second time. There is simply no necessity whatever to use the injection of iron, and for our own part we should always disapprove of it. —EDS.]

THE LONG MIDWIFERY FORCEPS AS A COMPRESSOR.—By making the long forceps rather heavier, and attaching a rack and pinion to the handle, connected by a screw which regulates the amount of pressure exercised on the child's head, we have an instrument greatly increased in power, and capable of useful employment in cases where the ordinary long forceps would be of no value. It is possible to compress a child's head with the forceps sufficiently to enable it to be extracted through a pelvis rather smaller than its natural diameter. No argument is necessary to prove the extraordinary compressibility of the fœtal head. Every tyro in midwifery is cognisant of the extraordinary manner in which the child's head may be moulded or lengthened out by the pressure to which it is subjected during protracted labour, without any permanent injury, and the intention of using a compressing forceps such as mine is to imitate and supplement this natural moulding process in cases where the *vis à tergo* does not suffice to overcome some obstacle to delivery. Living children have been extracted through pelves measuring three inches in their widest diameter; therefore it does not follow that because a woman's pelvis is small, or somewhat deformed, she must be delivered by craniotomy or cephalotripsy. On the contrary, I have myself recorded cases which prove that even under these circumstances the forceps may sometimes be used with success; and in no less than twenty-nine of my forceps operations there was some degree of disproportion. For extracting the head when low down in the pelvis the short straight forceps answers better than one with a double curve. In using the long forceps it will be found easier to introduce the left-hand blade first, whereas with the short instrument the upper blade is first applied. Before passing it the instrument may be locked so that the operator can see that the blade he selects first will look forward when *in situ*, or in other words that its curve will correspond with that of the pelvis. When the head is high up above the brim the hand should be introduced till the ear is felt, not that it is always necessary to apply the long forceps in this situation, but it is always necessary to guard the uterus from the instrument, which should be cautiously passed between the operator's hand and the child's head in the transverse or oblique diameter of the brim of the pelvis. The introduction of the second blade and locking require no further observation. When properly adjusted, though locked, the handles of this instrument should not come closely together; they may therefore be very slowly and gently brought nearer each other by the screw at their extremity, but no force is to be used, nor any violent effort made to approximate them under any circumstances. (Dr. T. M. Madden, p. 225.)

VARICOCELE OF THE LABIUM.—A varicocele of the labium gives rise to much discomfort from the excoriations and discharge produced, but its removal is attended with great danger from hemorrhage. By the use of the elastic ligature, however, this danger may be avoided. A case is related in which an operation had to be abandoned and the patient watched day and night by dressers, but in which the use of the ligature at once led to a successful result. (Mr. L. Tait, Lancet, June 27, p. 905.)

VOMITING OF PREGNANCY.—*Hydrochloral by the Rectum.*—Dr. Simmons, of Yokohama, Japan, states that in a case of vomiting of pregnancy in which all the remedies used had failed, he suggested the administration by the rectum, morning and evening, of thirty grains of hydrochloral on mucilage, and this to be increased if there was no improvement, or if the specific effect of the medicine was not too decided. An amelioration of the symptoms was obtained by the first injection, and a still more satisfactory one followed the administration of the second. The second day's use of the remedy arrested the vomiting, except at long intervals, and on the third day both nausea and vomiting ceased entirely. There was no return of the symptom. (Dr. Simmons, p. 228.)

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THE

RETROSPECT

OF

PRACTICAL MEDICINE AND SURGERY,

BEING

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W. BRAITHWAITE, M.D.,
LATE LECTURER ON MIDWIFERY AND THE DISEASES OF WOMEN AND CHILDREN AT THE LEEDS SCHOOL OF MEDICINE, ETC.,

AND

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REMARKABLE STATEMENT.

From Hall's Journal of Health, for October.

It is evident that medicine will be taken just as long as our worn-out bodies demand remedial agents. That the sick will forever fly to the doctor and the druggist for relief from all the ills that flesh is heir to, is clear; and it is equally apparent that it is the duty of the medical man not only to refine, and purify, and concentrate the drugs employed, but also to eliminate from them the nauseating and unpleasant conditions by which the use of the larger part of medical preparations is attended. We hail with pleasure all intelligent efforts which we observe in this direction, and shall rejoice most heartily in any discovery which will deprive the medicines exhibited of their offensive flavor. To this end, it has been common of late years to coat the surface of pills with a sugar compound, by the aid of which they are swallowed without exciting emotions of disgust. But only solid substances can be readily formed into pills. There are many fluid medicines of great therapeutic value, but unpleasant to the taste, and these must either be swallowed in their natural form—to the infinite annoyance of the palate—or must be partially disguised by the addition of some more palatable substance, or must be conveyed into the stomach by the means of some tasteless vehicle. Against the use of a large class of unprotected fluid medicines the sense of taste utters its strong protest; so strong, indeed, that the stomach is very apt to join with it in condemning the aggression. This is the most serious obstacle met with by physicians—the reluctance of the stomach to receive and retain the medicines swallowed. If the sense of taste could be shorn of its power during the administration of remedial agents, "irritable stomachs" would be far less common, and the best effects of the medicines employed would be more frequently secured. We should be rejoiced if the use of all drugs could cease at once and forever. It would delight us to know that in the future all diseases were to be successfully treated without medicines. But that happy millennium has not yet reached us. We must still swallow our unpleasant potions, and fight fire with fire. Let us, then, seek to render the means which we believe it to be our duty to employ as endurable as possible. An expert chemist, Dundas Dick, of this city, is accomplishing great good in this direction. His method of administering unpleasant fluids is to put them up in little bottles for the use of physicians and the public, and to cause the patient to swallow bottle and all! Our readers may think this a singular statement, but it is strictly true. The only explanation requisite to a clear understanding of the case is as to the nature of the bottle. The fact is, the bottle is made of pure gelatine—such as jellies are made of—and, while it affords a perfect protection to the confined medicine, it is almost instantly dissolved in the stomach. The full effect of the medicine is thus secured without unpleasantness, while the vehicle or vessel used simply acts as demulcent and useful food. Dr. Dick confines within these small gelatinous cells several kinds of medicines which are largely employed, and which are difficult of administration in their naked condition. These are castor oil, cod-liver oil, oil of sandal-wood, the balsams, etc., and the protection thus afforded the palate is securing for these potent drugs a very large sale. Of course, it would be a very easy thing for a chemist who lacked conscience and was devoid of principle to deceive the consumers of his articles. It is known that very impure and wretched drugs have been put up in this form by the unprincipled, and that the use of the capsule covering has thus been brought into great disrepute. To heighten the reputation of this admirable vehicle is the work of Dr. Dick, and he accomplishes it by the strictest fidelity in the preparation of his goods. He secures only pure articles, regardless of cost, and puts them up with scrupulous care. His prices are necessarily higher than those of the cheap and obscure vendor, bot they leave for him only a small margin of profit, because of the superior excellence of his goods. In nothing is more care necessary than in the selection of the articles swallowed. If this is true in the matter of food used by the healthy, how much more important is this caution in that of the medicines taken by the sick! The reputation of the remedies of which we have spoken rests entirely upon their purity, and leading physicians testify to their trustworthy qualities. So apparent is this to medical men in large practice, that they are careful to prescribe no capsules except these, for the purity of the contents of which they can personally vouch. So far as we have been able to learn, Dr. Dick's products stand at the head of all articles in his line. That they are precisely what they purport to be is, we believe, universally admitted. It is curious to observe the manufacture of these tasteless preparations. Every capsule passes through not less than twenty hands, and is subjected to not less than five critical examinations. They are then carefully wrapped in tinfoil and neatly boxed for transportation. The industry is a rapidly growing one, and new articles of recognized merit are being thus protected by the film of harmless gelatine. The articles thus put up are solely such as are employed by the educated medical man, and no quack compounds or secret preparations are found in his catalogues. The vehicle of gelatine is employed, not for purposes of concealment or disguise, but simply to secure for the remedies an easy passage to the stomach. Each article used has its place in medical science, and none has more rapidly attained to a position of prominence than the oil of sandal-wood, which is found to be superior in the diseases to which it is adapted to all other remedies. Castor oil, generally so unpleasant to the taste, is readily swallowed in its delicate envelope, and its effects are in no degree impaired. We are convinced we are doing a real service to those who imagine themselves compelled to swallow nauseating medicines when we call their attention to these elegant preparations of Dr. Dick. If we were able to convince them that they could get along without drugs in many cases in which they deem them of the first importance, we should most heartily congratulate them and ourselves. But since this cannot be, let us urge them not to unnecessarily offend the palate, with which the stomach is so sure to sympathize. These tasteless medicines are sold by all good druggists.

PRACTICAL MEDICINE.

DISEASES AFFECTING THE SYSTEM GENERALLY.

ART. 1.—ON THE ACTION OF THE SEPTINOUS POISONS ON THE PRODUCTION OF FEVER.

By Dr. B. W. RICHARDSON, F.R.S., &c.

In a lecture delivered by Dr. Richardson before the Society of Medical Officers of Health, at their last meeting, a new theory was offered on the action of the poisons of the contagious diseases in the production of symptoms which mark those diseases, and especially the symptom of fever. In a lecture delivered before the same Society, in the year 1865, the author detailed his original experiments on the poisonous action of an organic substance he had obtained from the sero-sanguineous fluid that had been removed by Mr. Spencer Wells from the peritoneal cavity of a woman suffering from pyæmia after the operation of ovariotomy. To this organic poisonous substance he (Dr. Richardson) at that time gave the name of septine, and he showed not only that it would communicate fatal disease to an inferior animal, but that the same disease could be communicated from the secretions of the primarily infected animal to other healthy animals in direct series. He also showed in the same research that the organic poison could be made to combine with acids so as to form salts which retained the poisonous qualities of the original substance. That a similar poisonous substance is present in decomposing blood, and that the poison can be transmitted in a series of animals, have since been confirmed by the independent researches of many physiologists, and the fact may be considered as fully established, although great difference of opinion still remains as to the nature of the organic product, some assigning to it purely physical, others vital properties.

We may be able by and by to discuss these different views at length. At present we are intent only to indicate the new theory which the author, whose communication we now notice, offers as to the mode in which the organic poisons produce their peculiar effects. On this important inquiry he has been occupied ever since his researches in 1865, and the result is to the effect, that the poisons exert their deleterious action through the property they possess of setting at liberty the oxygen of the blood in undue quantities in the extreme circulation. By way of experimental demonstration, Dr. Richardson took specimens of solutions of peroxide of hydrogen, and inoculated them with points of different organic poisonous animal substances,—viz., decomposing blood, pyæmia poison, pus, fibrine, and vaccine lymph. In the presence of all these bodies, oxygen began to be immediately liberated from the solution. Other organic substances—mucus, for instance—would not liberate oxygen, a fact which could be applied (as was shown by an experiment) for diagnosing mucus from purulent matter. Proceeding with his demonstration, Dr. Richardson charged blood with oxygen from the peroxide solution; then, by inoculating this blood and setting oxygen at liberty, he showed the temperature of the blood rose 4° Fahr. In his further observations, he explained that these organic disturbing substances are themselves decomposed in the process of the change they excite, and that they all seem to be derived originally either from fibrine or cellular tissue.

The conclusion arrived at, and which was advanced admittedly as a theory in its present state, is that the fever-producing poisons act in the way described by setting oxygen free in the blood in undue proportion. The theory, it was urged, explains the phenomenon of remittency. The accession of fever is due to the presence of the poison, but as the poison becomes destroyed the disturbance ceases until a new charge is locally produced and carried into the blood. The theory also explains the phenomena of those malignant contagious diseases in which death occurs very rapidly, with symptoms of asphyxia and convulsion. Here, it is assumed, the liberation of oxygen is sudden and complete, and the blood so surcharged with poisonous matter that it cannot duly absorb and fix oxygen in the pulmonary circuit. Thus an asphyxia commences from the blood itself.

Some therapeutical considerations brought the lecture to a close. It was shown that certain medicinal substances, among which quinine was specially named, counteract the different poisons in their power of liberating oxygen.

Our readers will gather from this summary that a new field of inquiry on the subject of the poisons of the contagious diseases is opened by these researches. That the inferences drawn support the physical side of the question may naturally be expected, coming as they do from an author who for so many years has been one of the most prominent exponents of the physical theory of contagion.—*Lancet, April* 3, 1875, *p.* 490.

2.—ON MALARIAL FEVERS.

By Dr. T. Inman, Consulting Physician to the Liverpool Royal Infirmary.

The so-called malarious diseases are due to cold or chill after exposure to great heat, especially after it has been accompanied with exhausting labour.

Than this hypothesis, nothing can be more simple. Every doctor in Great Britain is aware how frequently bronchitis, pneumonia, and other severe affections, are attributed to cold—borne by a person who has been previously exhausted by exercise in a hot atmosphere—or by the sweating which labour produces, even in winter. If we see a navvy, teeming with perspiration, lie down and sleep in a draught, or on a cold stone, we say to ourselves, "that he will be lucky if he do not require a doctor."

There is, then, *à priori*, something reasonable in the idea, that an excess of heat and cold will produce analogous and more severe results. Now, in England, the difference between the day temperature and the night, is barely twenty; 90 degs. in the shade by day is about 70 degs. in the shade by night; but, in malarious districts, the temperature by day for those working in the sun (and it is those who get the fever), is about 140–150 degs.; at night, this falls to about 50–45 degs. Again, it is known, that during frost, such as the French Army experienced in the retreat from Moscow, the cold is bearable; but when a thaw sets in, and the cold is moist, not dry, frostbite is common.

Every notoriously malarious district is marshy; consequently those who live therein, are subject to more severe variations of temperature than those who live in dry places. During the day, the hot air over a marsh or lagoon is saturated with dissolved water as soon as the sun is low, and still more after it sets. This water is *precipitated*, and we have a cold dew—did ever any one hear of a hot one?

I have emphasised the word "precipitated" because it involves a most important point. If the word be used correctly, there can be no emanation from the ground during the time the aqueous particles are falling. I need only point out, that terrestrial emanations only take place by day, and must cease at night; yet night is the fatal half of the four-and-twenty hours. Night is also the coldest part of the day in every country, and the cold is most intense when there is nothing to intervene between the earth and stars.

It is well known that the Pontine marshes are only dangerous after sundown, and only then to anyone who cannot keep himself warm. Dr. Oldham tested the malarious theory, by sleeping, for many months together, on a bed placed in a swamp, and barely two feet from the ground. There were atrocious stinks, and his nostrils suffered accordingly; but he always wrapped himself up warmly, and never got fever that way. He did get it once before, and that was in the room of his superior officer, and under the following circumstances. He had ridden, in the heat of an Indian day, to deliver a report, and was perspiring; when he arrived, the room occupied by the colonel was cooled with a punkah, and the doctor was suddenly chilled, and could not leave the house, for he instantly was struck down by fever. His book contains many such cases.

This will serve to introduce the reason why fever has attended disturbance of the soil. Men work hard, under a hot sun during the greatest part of the day; when night comes they are tired, glad of something to drink, take too much, and sleep too heavily, to be awakened by the cold. The blood has, so to speak, been boiling all day, at night it is chilled almost to the freezing-point—hence the fever, which may show itself as intermittent or remittent; or as the attendant of dysentery hepatitis, pneumonia, &c.

Consul Hutchinson in Peru noticed these causes in operation, and was not surprised at their results. In some parts of South America, to "catch a cold" is "to get an ague," the expressions being synonymous.

In the Ashantee expedition, the alternation between daily heat and moist nightly cold was enormous; and any one who has read of the excessive exertion, and consequent fatigue, undergone by the men, whilst the sun was above the horizon, and the cold which they had to endure when that source of heat had set, can readily understand why the fevers which the soldiers had were so severe. Had the men not been partially sheltered, by the forests which they traversed, from the radiation of their heat into space, matters would have been infinitely worse. Even horses who sleep in the open air in Arabia, become diseased; all the valuable ones are sheltered during the night by some sort of cover, which prevents chill.

Warmth it is that prevents getting fevers. A friend of mine, who lived at Sierra Leone for years, never had even a touch of fever; for, during the wet season, he habitually warmed his rooms with a stove, and always was warmly clad.

These observations have a practical bearing; for if there be such a poison as "malaria," we cannot absolutely guard ourselves against it; but, if it be true that the diseases attributed hitherto to malarious miasms are really due to severe chill after great heat or great exertion, we can arm ourselves against them. How severe and sudden may be the effect of a chill, the following will show. A medical friend of mine living in Cheshire, saw, one day in May, a maid of his, who had been engaged in washing, and was bathed with perspiration, standing in a draught of air to cool herself. He sent her away from the door, but, ere the day was over, the woman had general dropsy; the urine passed in twenty-four hours amounted only to half an ounce, and was full of tube-casts, though not albuminous. Surely, no one would say that she had imbibed a poison from the soap-suds; nor, had she been delving, would one say that she had been poisoned by the terrestrial effluvia. Until the teachers of our youth have a larger capacity for inquiring into old facts, with the light of modern science, and for basing their instruction upon logical deductions, rather than what are called "time-honoured facts"—because they have been asserted for a century or two, though not facts at all—the practice of our profession will not improve, not being based upon sound knowledge.

If a soldier be taught that agues, &c., come from "soil," he takes no precaution when no "soil" is present to produce them; and then, when a *medico* finds a detachment ill with intermittents or remittents, he feels helpless to prevent the spread of the disease. On the contrary, had he been taught truly, he would study the air as well as the earth, and remember the dictum of the Indian colonel, who said to Dr. Oldham, "You doctors may talk of marsh-poison as you like; but my experience has taught me that hot days and cold nights are certain to produce fever."

To my mind it appears strange than an ague-fit coming on after a gravel-walk has been raked, or a pit dug, must necessarily rise from a disturbance of the earth. I can recall plenty of cases in which ditches full of vegetable *débris*, stagnant ponds, and soil of all sorts, have been dug out and dug over. In one, this process was marked by an attack of sciatica in the master; in another, by gout; in another, by chicken-pox; in another, by pneumonia; in another, by a drunken bout; in another, by catarrh; in another, by paralysis ; in another, by chorea; and in another, by gonorrhœa. Would not every one "write me down an ass" if I associated any one of these complaints with an upturning of sods, delving ditches, taking up potatoes, storing carrots, turnips, or mangold, or with other farm labour? Then, if an attack of ague should come on, are we to be asked to jump to the conclusion that the complaint was caused by raking a gravel-walk, or digging a grave in the nearest cemetery? Again, correspondents have avoided the very important point, that emanations, whether from marsh or river, trench or pit, are the most abundant and incessant during the heat of the day, a period when nobody pretends—except in such cases when the body is suddenly chilled by a hailstorm, or by wading through cold rivers, or by a cold wind from the mountains, or simply by a drying zephyr when the body is covered with thin garments soaked with perspiration, rain, &c.—that agues are caught. The well-known Moremma and Pontine marshes and the Campagna around Rome are innocuous during the day, when the sun is hot and every emanation strong.

When night falls, and emanation ceases, then comes the danger of ague, &c. Clearly, then, the cause must be sought in a something which there is in common between nights in general and those conditions that will give ague during the day. This something, most unquestionably, is not malaria, or an emanation from any soil.

I commend the inquiry to those whose experience is commensurate with their acumen. I am quite aware how easy it is to try to put down a thinker by an array of so-called facts; and I have known a "stay-at-home" astronomer convict of inaccurate observations the whole of the officers of an exploring expedition who insisted that their chronometers went wrong for three days, under the influence of a land-breeze from Australia. The head man was not so silly as to stick up for the malarious effect of proximity to land, but re-examined his calculations, and discovered the error.

Some writers seem wholly to have misunderstood the bad effect of sleeping on the deck of a ship being dependent upon (1) hard work and exhaustion under a hot sun; (2) sleeping where the body is certain to be chilled by radiation or a cold land-wind ; and they make merry over the fact that many are taken ill between decks. Unquestionably they are, when all the air-holes are kept open, and admit a chilly land-breeze. Men on board ships in the deadliest African rivers escape fevers—as far as they are caught on shipboard—by closing the windows at sundown. At sea, the air in the tropics is equable day and night, when not chilled by a cold land-breeze. In like manner, one may cross the Pontine Marshes by night, by excluding from the carriage in which one rides the bitter cold; not that which we call bitter in England, but very severe to those accustomed to a day temperature of 140 degs. in the sun and 88 to 92 degs. in the shade, and who are too lightly clad to bear a sudden fall to 60 or 50 degs. during the hours of darkness. No amount of experience in the field can alter the physical fact that in many places in hot climates the nights are colder than the days, especially when the sky is clear. Even frost occurs occasionally by night on the Sahara; and the Arab always keeps his most valued horses under cover after sundown, and in good stables too.—*British Medical Journal, Jan.* 2, *and Feb.* 6, 1875, *pp.* 7, 172.

3.—REMARKS ON TYPHUS FEVER, AND THE ADMINISTRATION OF ALCOHOL AND DIGITALIS IN THIS DISEASE.

By Dr. H. MACNAUGHTON JONES, Consulting Physician to the Cork Fever Hospital.

I desire to make a few remarks on the administration of alcohol and digitalis in fever. It is strange that even to the present moment physiological observers are so divided in reference to the essential points in the physiological action of alcohol, and assign to it such opposite physiological and therapeutical properties. Dr. Parkes said, in 1870, that as the narcotism and a great rise in the frequency of the heart's beats occur at the same time, it is clear that it is attributable to a nervous implication, it does not reduce animal heat (except in toxic doses), it does not arrest the metamorphosis of tissues or the elimination of nitrogenous excreta. "It appears to us unlikely that it can enable the body to perform more work on less food, though by quickening a failing heart it may enable work to be done which otherwise could not be so." Comparing it to the spur in the side of a horse—"eliciting force, not supplying it;" recognising its use in "exciting a feeble heart, accelerating a languid capillary circulation," there being "no agent requiring more skill to obtain the good and avoid the evil which its use entails," and as the result of the experiments recorded before the Royal Society, February, 1874, the conclusion arrived at was, that alcohol in dietetic doses neither lowers nor raises the temperature. The contractions of the heart were increased in rapidity and force, the period of rest shortened, this increased work being compensated for, in the case of moderate doses, by a corresponding diminution of work when the alcohol was stopped. At the same time the capillaries are dilated, and allow the blood to pass more freely through them. Taking the mean pulse of the non-alcoholic days, and contrasting it with the six alcoholic, Dr. Parkes showed (1870) how the heart performed *one-fifth* more work on the fifth and sixth days, the heart during the alcoholic period doing daily work in excess, equal to lifting 15·8 tons one foot, and the last two days, 24 tons raised the same distance.

On the other hand, Dr. Wood, in his recent complete work on "Therapeutics," quotes Dr. Franz Reigel's experiments, which go to prove that there is a slight anti-pyretic property in alcohol; he remarks on its absence in those who drink stimulants habitually, and that its anti-pyretic action is lessened by its continued administration, and he draws attention to the speedy return of the temperature to its "previous grade." He cites the experiments of Binz to show that it is not through the nervous system the alcohol acts, but that it lowers temperature by directly checking tissue metamorphosis. There appears to be a still greater variety of opinion as to its action in retarding or promoting the elimination of carbonic acid. The more important point remains—the value of alcohol as a dietetic agent.

It would be impossible and useless, to enter into the various views put forward on this essential matter. Dr. Wood quotes Baudot, Schulinus, Anstie, Thudichum, and Dupré, as ranged on the side of non-elimination; and he himself, it appears, strongly holds to the views that alcohol is a food, and that it is, in great part, changed in the system. Dr. Wood relies greatly on the experiments of Dr. Ford (*New York Medical Journal*, 1872), who discovered alcohol in liver tissue and the thoracic blood—corroborated, apparently, by those of Dupré and Bechamp (1873), who discovered alcohol in the urine of teetotallers, the latter in sufficient quantity to burn it. Dr. Wood concludes that alcohol "in small amount is an arterial and cerebral stimulant, increasing functional activity in the nervous and circulatory systems;" "is a food in the sense that it is destroyed in the system and discharges a physiological office; is a retarder of tissue changes; is oxidized in the body; generates force; and considers that in it we have a means of sustaining the system during the train of an acute exhaustive disease." Dr. Wood has evidently great faith in its action in advanced cases of fever, repeating the celebrated rules of Graves, that as long as it lowers the temperature and pulse, moistens the tongue and skin, and quiets delirium, it does good; but with a bounding, rapid pulse, dry skin and tongue, a "*restless*" patient, stimulants do harm.

I have thus instanced one, out of the many, of the most recently-published expressions on this question. Whatever may have been the views of our celebrated Irish physician when he prescribed these rules for the exhibition of stimulants in fever, and when he recognised the absurdity of the old depletory and antiphlogistic measures, and the vital importance of support and nutriment, certain I am that with our knowledge of the action of alcohol and its questionable dietetic and force-producing value, he would have carefully qualified his directions to "feed fever," and have laid down much stricter rules and precautions for the exhibition of such stimulants than are embodied in those above alluded to. The patient whose skin is moist, whose tongue is not brown and dry, whose pulse is not rapid, or temperature increasing, and whose brain is quiet, had better be let alone; the exhibition of alcoholic stimulants to such a one appears to me fraught with danger, and to push their use until these common attendants on their administration manifest themselves (when, in a large majority of cases, a patient may be guided through even a bad type of fever without them), seems to me rash in the extreme. If we have "to apply the spur to the side of the horse," let us, at least, not waste his energy and exhaust his force before both are required for a final effort, and at a time when he is straining his utmost to win the race for life, assisted by his own mettle, neither over-weighted by useless material, or irritated by incessant applications of the stimulating whip. True, it does not appear, from any experiments hitherto made, that the temperature or respirations are increased by the exhibition of small doses of alcohol repeated, but we know that the heart's beats are, and the surplus force elicited must find some correlative expression, and though as heat, that manifestation in a condition of health, as indicated by a thermometer, at the surface of the body, may be slight; yet it appears to me that in such a disease as fever each additional action will partly find its equivalent in heat generated, and so, at least, assist in maintaining and not lowering the temperature. The internal work done by a man's heart has been calculated at 500,040 pounds out of the 1,610,206 of total work done by the body in twenty-four hours; this is entirely dependent on the force and frequency of the movements performed by this organ. It appears manifest that an agent which can materially increase this work, alter its character, or misdirect its expenditure, laying aside its effects on the heat generated by this elicited force, must be very cautiously administered.

We may, I believe, as far as our present knowledge enables us to judge, conclude that alcoholic stimulants in fever, are useful to keep up the calorifying process, where the tendency (as in many cases of fever undoubtedly is the case) is to a great depression of temperature, and consequent death (*vide* Carpenter 488, 7th edition). In this condition of impending exhaustion, with low temperature and inability to generate heat, stimulants undoubtedly are our sheet anchor; and they enable us, when we see a patient threatened with a complete consumption of the normal body-force, to elicit, by the powerful stimulus given to the nervous system, that which is latent in the system, and so to tide over a period of unusual demand, which may prove too much for the over-taxed organs; thus we gain time both for the exhibition of remedies, and also to administer true force-forming nutriment and support.

I will briefly now record the opinion I have formed of the use of digitalis in fever, from its administration in a large number of cases. It is not necessary to say a word on the action of an agent, the effects of which are so thoroughly understood, and when its mode of action has been (as a cardiac stimulant), so fully investigated by Traube, Pelikan, Dybkowsky, Fothergill, Handfield Jones, Fuller, Ackermann, Malan, Boehm, and others. The treatises by Fothergill and Lauder Brunton will well repay perusal, explaining thoroughly the action of digitalis on the cardiac inhibitory apparatus, and also the cardiac ganglia. "The following proposition," says Dr. Wood, "expresses our present knowledge, and probably is very near to the truth. Digitalis, in moderate doses, stimulates the musculo-motor portion of the heart (probably its contained ganglia), increases the activity of the inhibitory apparatus, and causes contraction of the arterioles." I believe that the experiments of Eulenburg and Ehrenhaus, as mentioned by Dr. Fothergill, have put it beyond question, that, independently of any action which digitalis may have on the inhibitory apparatus, it directly affects the rhythmical action of the heart through the cardiac ganglia. That digitalis has the power of steadying the pulse, rendering it firmer and less compressible, has been for some time known, its dangerous effects only becoming manifest when it is pushed too far, or toxic doses administered. Then the arterial pressure falls, and the pulse passes from the slow and steady to the rapid and weak. It is clear that in typhus the inhibitory action of the vagus must be lessened; so also the rhythmical power of the cardiac ganglia is interfered with. This is shown by the rapid and weak action, by the character of the pulse ; there is a diminished arterial pressure and tension. Dr. Grimshaw, of Dublin, drew attention to this fact, in connexion with the action of digitalis, so far back as the year 1867. As it is universally agreed that digitalis possesses, in therapeutic doses, the property of exciting the inhibitory action of the vagus, and of increasing the arterial pressure, we might naturally assume that, in such a disease as typhus, with its quick compressive pulse, it would be indicated; but again, it appears to me that the result to be desired from the administration of a drug in typhus would be the consequent diminution of the internal work done; a conservatism of force and prevention of waste. I cannot reconcile increased action of the circulatory and respiratory organs in consequence of an abnormal stimulation without a correlative manifestation in an evolution of heat, and I take it that, in many cases of fever, in which the temperature, towards its termination, is gradually lowered to a dangerous degree, or suddenly falls, it is because not only has the natural body-heat been expended, but its latent reserve fund has been encroached on, its force, represented as heat, is exhausted, and there is no power in the system to elicit it. To enable the body, with the least expenditure of force, to tide over its period of extra work, to modify and restrain the general process of combustion, which is taking place in excess, must be our object. In fever the question is—does digitalis assist us to do this ? I believe it does. I am not surprised that digitalis, in toxic doses, raises the temperature ; here we are brought again to diminished arterial pressure and a rapid pulse ; as in typhus fever, the balance between the musculo-motor power of the heart and the inhibitory apparatus is upset, and from this rapid action we might, I think, expect a rise in temperature. Does clinical experience show that digitalis has this direct antipyretic effect ? Wunderlich, our greatest modern authority on the temperature in acute disease, states that it has a decided antipyretic value in typhoid fever ; and we know that it has been given as an antipyretic in other acute diseases, as well as in fever. I have given digitalis, *watching carefully its effects on the temperature*, in over two hundred cases of acute disease—simple fever, typhus, typhoid, pneumonia, pleuropneumonia, delirium tremens, remittent fever, &c., by itself or combined, and I have no doubt of its antipyretic properties. That these will be manifested suddenly, or follow immediately on its use, or that they will be apparent in every instance of the administration of the drug (no more than the effects of any other medicine, when given in moderate doses, invariably follow) is not to be expected. On the contrary, its mode of action is subject to great variations in this respect, in different patients, and often in the same patient. I would say that its antipyretic action, as shown by a characteristic fall, in many cases, is uncertain, or there may be an unaccountable rise during its administration, and a corresponding fall subsequently. Yet that it influences the temperature, in some cases rapidly, in others slowly, is to my mind, beyond a doubt. I would not expect, from what we know of the physiological action of digitalis, a very marked and decided fall in temperature, though I have frequently seen this, and at periods not connected with defervescence; what I would rather hope would be a restraining power, a limiting of the range, a gradual, but marked fall, and this is exactly, in the majority of cases, what clinical experience has shown me is the case. Any one who compares a number of charts of cases in which such an antipyretic as quinine or nitrate of potash (in large doses) has been given, with those in which digitalis has been used, will at once be struck with the difference in their action—the marked dip in the one and sudden fall, with corresponding diminution of pulse-beats, the gradual decline of the other, with an equally slow reduction of the pulse. Briefly, I may summarise my experience of its use in typhus thus:—

1. *Pulse and Respiration.*—It has (not constantly) a well marked effect in changing the character of the pulse, strengthening it, improving its tone, rendering it less compressible, at the same time that it gradually lowers it, and, if pushed for a lengthened period, generally reduces it to between 40 and 60 ; this result being obviated by watching the temperature, and ceasing the administration of the medicine on its marked reduction ; never exceeding moderate doses of the drug, and repeating these at intervals dependent on the *general condition of the patient.* The respirations, as a rule, decrease with the pulse.

2. *Temperature.*—It appears, in a large majority of cases, to perceptibly affect the temperature within two days after its administration, in moderate doses—say twenty drops of tincture or half an ounce of infusion or both combined—every three or four hours (I generally give twenty drops of chloric ether with it, as I find that this renders it more tolerant to the patient); the reduction of temperature will, to a great extent, depend on the quantity of the drug administered and its regular exhibition; the rise or fall being materially influenced by the continued use of the drug night and day. In a large proportion of cases I treated, it was not given at night ; in some it was, and in these latter the characteristic action was much more speedily manifest. In some cases this effect on the temperature is not so apparent ; this I notice more particularly in cases with very heavy eruption, also in fatal cases ; in others great variations in the temperature, without any apparent cause, take place during its administration. On young patients its action is particularly marked as a rule.

3. *Length of the Fever.*—I cannot say that it appears to decidedly influence the duration of the fever; in most of the cases in which I administered it, the fever was not of long duration, a large number terminating from the fifteenth to the eighteenth days.

4. *Nervous System.*—This was one of the most marked results. There appeared, in a large majority of the cases, to be complete immunity from delirium. I had only two cases, during the past twelve months, treated with digitalis and *without alcohol*, in which there was what I would term "high delirium." Most of the cases went through the fever quietly, and there was a marked contrast to those in which I had been in the habit of giving the latter.

5. *Tongue and Skin.*—The tongue (particularly in those cases treated without alcohol) was moist in nearly every instance, and there was a noticeable absence of the hard, brown, and dry tongue, so characteristic of this affection, especially when wine is administered. I could not say that there was any marked effect on the petechiæ, save their early disappearance in a large number of cases; this, however, might only be coincident on their favourable course and termination. I was also struck by the absence of critical sweats.

6. *Urinary Secretion.*—The secondary effect of digitalis on the kidney was apparent in the free secretion of urine in nearly all the cases treated with it. In cases treated without alcohol, with or without digitalis, I found convalescence quicker, less consequent debility, and I believe with Dr. Grimshaw, that the administration of the digitalis lessened the necessity for alcoholic stimulants of any kind. In few of my cases did it produce vomiting.

Conclusions.—On the whole, then, I have arrived at these conclusions:—

1. That in the treatment of fever, typhus and other forms, too much reliance has been placed on *alcoholic* stimulants, and that fashion, rather than reason, has swayed many in their *indiscriminate* employment.

2. That the per-centage of cases requiring such stimulants is a low one; and that while our administration of them, as regards quantity and kind, must depend entirely on the condition of the *patient*, still the utmost caution (with our present knowledge of their physiological action) is required.

3. That in digitalis we have a powerful cardiac stimulant, which, while it gives force to the heart, does not do so at the expense of the system, but rather is a conservative agent, which controls expenditure and limits waste of vital action—always, of course, remembering that a large number of cases will

recover without any specific treatment, save that care and guidance which provides for the wants of the system and secures the patient from the risks of complications. That digitalis appears to be indicated in the early periods of many cases of typhus in which we have a rapid pulse and high temperature range, regulating our administration by its effects on both, using it, rather, with the object of guiding the patient up to a certain point, than of curing the disease.—*Dublin Journal of Medical Science, April*, 1875, *p.* 313.

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4. ON THE PATHOLOGY OF SMALL-POX AND TYPHOID FEVER.

By Dr. T. LAUDER BRUNTON, F.R.S., Lecturer on Materia Medica and Therapeutics at St. Bartholomew's Hospital.

In a paper communicated to the Royal Society in June last, Dr. Klein announced the interesting fact that he had discovered the presence of a vegetable organism, a fungus, in fact, in the pustules of sheep-pox. Sheep-pox possesses a specific virus of its own, and is not the same disease as small-pox, for it cannot be communicated to man; and the different stages of papules, vesicles, and pustules are not so sharply defined as in small-pox. Nevertheless, it resembles small-pox so closely, both in its course and in the anatomical lesions which occur in it, that there can be little doubt that both diseases have a similar cause. If sheep-pox depends on the presence and growth of a fungus in the skin, then in all probability small-pox does so too; although the two diseases may be caused by different species of fungus, one of which will only grow in the skin of the sheep, while the other will only thrive in the skin of man. It is difficult to obtain pieces of skin from small-pox patients, for the sake of examining them microscopically at every stage of the disease, but sheep-pox may be readily studied, for animals inoculated with it may be killed and their skins examined, as often as is necessary. In the hope of thus discovering indirectly the cause of small-pox, Dr. Klein carefully observed the microscopical appearances of the pustules in sheep. He found that for the first two days after the pock begins to appear, there is little or nothing by which to distinguish between it and any ordinary inflammation. The lymphatic vessels of the corium are filled with a granular material, resembling coagulated plasma. About the third day, however, the contents of the lymphatics begin to exhibit very peculiar characters, for organisms of a distinctly vegetable nature appear in the granular matter. The granules begin to proliferate and form necklaces which give rise to filaments. The lymphatics now contain round or ovoid bodies and branching filaments. The filaments are sometimes separate from one another, and easily distinguishable : at other times, they are closely interlaced and form a felt-like mass. They grow rapidly, and in one or two days they fill most of the lymphatics of the corium. The masses which they form are now found to consist of the same elements as ordinary mould, viz., a spawn or mycelium of filaments, frequently jointed, from which other secondary filaments spring and bear the fructification or conidia. When the pock reaches the vesicular stage, the vesicles are found to contain masses like those in the lymphatics, but with thinner filaments and smaller conidia. Lymph corpuscles now wander in great numbers from the corium into the vesicles, and thus convert the fluid into pus ; while the corium, previously crowded with them, becomes entirely free from them, and pustulation is complete.

If a little of the lymph just described be taken from the vesicles it will, when inoculated, communicate the disease to another animal. The virus has been shown by Chauveau and Sanderson to be contained in the solid particles, and not in the fluid part of the lymph, and it is therefore highly probable that these fungi are the *materies morbi* in sheep-pox. This being the case, it follows, as has already been said, that a fungus of a similar kind is, in all probability, the *materies morbi* in small-pox.

The success of these investigations has induced Dr. Klein to extend his researches to the pathology of typhoid fever, and in this disease also he has succeeded in demonstrating the presence of a fungus. In sheep-pox the skin is the part where the disease chiefly manifests itself; in typhoid fever the intestine is the part which is chiefly affected. Accordingly we would expect that if the disease depends on the presence of a fungus, it would be found most readily in the skin in sheep-pox, and in the intestine in typhoid fever. According to Dr. Klein's observations this is indeed the case. The researches which he is conducting on this subject for the Medical Department of the Privy Council are not yet completed, but he has published a short preliminary notice of the results he has already obtained. The difficulties he has to contend with are here greater than they were in the case of sheep-pox, for he cannot obtain specimens at every stage of the disease, and the earliest one he has examined was taken from a patient who died on the seventh day after the occurrence of headache. His observations show that a vigorous absorption of peculiar organisms, which are really fungi, takes place in the intestine over and around Peyer's patches, and that these pass into the lymphatics and veins of the mucous membrane. These organisms appear under two forms. The first class consists of roundish bodies of a greenish-brown colour and varying size, some of them being two or three times the size of a coloured human blood-corpuscle, while others are only one half or one quarter the size. They generally lie together in thick masses of a dark olive-green colour, but whenever they are sufficiently apart from one another to allow of accurate observation (*e.g.*, at the margins of masses), numbers of them are found to be undergoing division, so that they present a kidney or dumb-bell shape. The second class consists of micrococci. Micrococci are small vegetable organisms which are from $\frac{1}{20000}$ to $\frac{1}{25000}$ of an inch in diameter, and under a low power appear like little dots, but under a high power appear as globular bodies. Each of these consists of protoplasm enclosed in a membrane of cellulose which resists the action of caustic potash. They sometimes appear isolated, but frequently they are found united together by an intercellular substance in twos, in necklaces, or in masses, or zoogl&oelig;a, as they are termed.

Although all that we can as yet positively assert with regard to the relation of these fungi to the intestinal lesions in typhoid fever is that they occur together, and we cannot say that it has been conclusively proved that the fungus is the cause of the lesions, yet it is so exceedingly probable that we may accept it, at least provisionally, as proven, and consider what bearing this new pathology will have upon treatment. Of course, if we are to cut short the disease, we must remove the cause, *i.e.*, we must destroy the fungi. But every one who has attempted to treat skin diseases dependent on the presence of parasitic fungi knows how difficult it is to destroy these organisms, even when they are lying superficially among the cells of the epidermis, exposed to the action of the powerful remedies, or poisons, we might say, which are used for their destruction.

The difficulty is immensely increased when they are no longer confined to the surface as in cases of tinea, but penetrate into the blood-vessels and lymphatics of the true skin, as in sheep- and small-pox; and the case appears to be hopeless when they infiltrate the tissues of the intestine, as they do in typhoid fever. For it seems scarcely probable that we shall find a remedy which will destroy these fungi, protected as they are by a membrane which will resist even liquor potassæ, without, at the same time, destroying the unprotected cells of the mucous membrane itself when applied to it. Still less probable does it seem that we shall find one which, when introduced into the blood and carried by it to the fungi, shall destroy them, without at the same time doing irreparable damage to the delicate cells of the brain and other vital centres, and thus curing the disease only by slaying the patient. Ought we not, then, to direct our utmost energies to the task of preventing the entrance of these deadly fungus germs into the organism, and thus prevent the disease which we can so little hope to cure?—*Practitioner*, *Jan.* 7, 1875, *p.* 5.

5.—ON THE TREATMENT OF THE DIARRHŒA OF TYPHOID FEVER.

By Dr. George Johnson, F.R.S., Senior Physician to King's College Hospital.

[The treatment of the diarrhœa forms a very important part of the management of typhoid fever, as, in the great majority of cases, the severity and danger of the disease are in direct proportion to the intensity and duration of the diarrhœa. The common practice at King's College Hospital was to give an enema containing from 10 to 20 drops of laudanum after each liquid stool. This plan, however, which was that strongly advocated by Dr. Todd, did not prove at all satisfactory.]

For a number of years we have entirely changed our treatment, and I have gradually arrived at the conclusion that in the treatment of typhoid fever careful nursing and feeding are of primary importance, while, as a rule, no medicines of any kind are required, and when not required they are often worse than useless. The result of this change of treatment has been that diarrhœa is a less frequent symptom than formerly, and when it does occur it is far more tractable, while tympanitic distension of the abdomen is a rare event. The mischievous opiate enemata and the torturing turpentine stupes have disappeared together. I believe that one of the main reasons why we have less diarrhœa than formerly is, that we carefully abstain from the employment of irritating drugs of all kinds. As a rule, a fever patient has the "yellow mixture," which is simply coloured water; and except an occasional dose of chloral to procure sleep, and a tonic during convalescence, we give no active medicines of any kind. We feed these patients mainly with milk, with the addition of beef-tea and two raw eggs in the twenty-four hours, and we give wine or brandy in quantities varying according to the urgency of the symptoms of exhaustion, especially in the advanced stages of the disease; but in many of the milder cases, and especially in the case of children, we find that no alcoholic stimulants are required from the beginning to the end of the fever, and when not required they are of course best withheld. I have said that we give no irritating drugs of any kind. For a time I adopted the practice which has been strongly recommended, of giving repeated doses of diluted mineral acids. I have long since abandoned this practice, for I am sure that it was injurious, and it was injurious in a very obvious and intelligible way: it irritated the ulcerated mucous membrane of the intestines, it caused pain and griping, and I believe that it often increased the diarrhœa. I have no doubt that the comparative infrequency of severe and obstinate diarrhœa amongst my enteric fever patients during the last few years is partly attributable to the discontinuance of this mineral acid treatment. The extreme sensitiveness of the intestinal mucous membrane during the progress of typhoid fever is obvious and indisputable. It is admitted on all hands that the greatest care is required in returning to solid food during convalescence; a want of caution in this respect has often been followed by a return of pain and diarrhœa, an increase of temperature, and not seldom by a decided relapse. If, then, a slice of bread or a morsel of fish can excite such local and general disturbance even after the subsidence of the fever, how improbable is it that repeated doses of an irritating mineral acid can be given without injury during the height of the fever, when the ulceration of the intestines is actively progressing!

One more hint I wish to give you with regard to the diarrhœa of typhoid fever, which is, that in all probability it is often increased by the patient's inability to digest the beef-tea and eggs which are sometimes too abundantly given. When you have reason to suspect that this may be the case, I advise you for a few days to keep the patient entirely upon milk, which contains all the elements required for the nutrition of the tissues in a form most easy of digestion. I have had a large experience of the effects of an exclusively milk diet in various forms of disease. In many cases of Bright's disease it is very efficacious, but one of the inconveniences in some of these cases is its tendency to cause troublesome constipation. In many cases of chronic diarrhœa and dysentery, milk diet will effect a cure without the aid of medicines of any kind. There is now in Twining ward a girl, aged 14, who for four months had been suffering from dysenteric diarrhœa, the stools containing much blood and mucus. She was put upon a diet of milk alone, without medicine: within a fortnight the diarrhœa entirely ceased, and she is now convalescent. For the reason, then, that milk has this antilaxative and even constipating effect in various morbid states, it is, when given alone, one of the best antidotes for the diarrhœa of typhoid fever.—*Practitioner, Jan.* 1875, *p.* 1.

6.—ACTION OF DIGITALIS IN THE EVOLUTION OF TYPHOID FEVER.

Dr. Bernheim, Professor Agrégé at the Faculty of Medicine at Nancy, publishes, in the Memoirs of the *Société de Médecine de Nancy* for 1873, his conclusions on this subject. They are as follows:—1. The thermometric evolution of typhoid fever is comprehended in the following formula, initial period from three to five days. Period of actual disease from one to two weeks, period of decline from six to eight days. In serious cases, a second irregular period commences about the middle of the third week. 2. Digitalis, when administered in typhoid fever, always produces lowering of the temperature; either complete defervescence or remission. 3. The first effect of digitalis on the temperature shows itself two days after administration, the lowest temperature is obtained on the following day, sometimes only on the fourth day after its administration. 4. The lowering is generally progressive; sometimes it terminates by a more rapid fall. In some cases, there is a very rapid fall in the interval between two thermometric observations, from the evening to the morning, or from the morning to the evening. 5. During the action of the digitalis, the temperature may rise again in the evening, often it is equal, or inferior to that of the morning. Defervescence, or the greatest remission, may occur in the evening. 6. This defervescence, or greatest remission, lasts from a few hours to three days, the temperature then rises. In about two-thirds of the cases, it no longer rises to the same height as before the administration of the digitalis. 7. The action of digitalis on the thermometric evolution of typhoid fever may be thus expressed, the temperature is lowered. Taking into account the descent, the minimum, and the reascent, it may be said that the duration of the influence on the temperature varies from three to twelve days, the average being seven days. In two-thirds of the cases the thermometer never reaches the original point. 8. The pulse generally falls gradually with the temperature; the temperature rarely falls before the pulse, or the pulse before the temperature. 9. It is very rarely that either the pulse or the temperature is alone influenced. 10. The pulse and the temperature fall together, but not in a parallel manner. Sometimes the pulse is lowered at night whilst the temperature still undergoes the evening exacerbation. 11. After the reascent of the temperature, the pulse generally remains low; it may even slacken still more, and attain its minimum several days later, even remaining slow during three weeks. 12. The lowering of the pulse varies from thirty to sixty pulsations. In the greater number of cases it falls below the normal. 13. The sphygmographic tracings undergo modifications through digitalis. Dicrotism between two pulsations appears on the line of descent. It rises again on that line. The pulse first becomes irregular, often reduplicate; then the line of descent becomes longer and more oblique, and tends to show a convexity above. These characteristics are explained by increase of tension and arterial tonicity. 14. Digitalis has never produced any unpleasant action on the nervous system nor on the digestive canal. The delirium often ceases or diminishes with the decrease of heat, and respiration is calmer. The intestinal hemorrhage pointed out by Ferber as being probably produced by digitalis, does not appear in any case to have been due to this medicament. 15. The fever may evolve itself with a slackened pulse. The acceleration of the heart's action is not necessary to fever, it is a secondary phenomenon which appears to be due to the augmentation of the heat itself. In the tracings of pulse and temperature taken about the beginning of an attack of fever, the thermometric tracing rises before that of the pulse. 16. The slackening of the pulse obtained by digitalis, is not the cause of the lowering of the temperature. 17. The physiological mechanism of the antipyretic action of digitalis is not explained. This action is at least partially independent of the heart and of the modifications of the arterial tension. Digitalis does not seem to act directly on organic combustion. A nerve-poison and not a blood-poison, it appears to act on the nervous system, the regulator of the animal temperature, an apparatus which, on one side, directs the waste of caloric notably by the vaso-motor nerves, and which, on the other hand, regulates the production of caloric by special ways, yet unknown, but admitted by most physiologists.—*British Medical Journal, March* 27, 1875, *p.* 416.

7.—ON THE ALLEGED SUCCESSFUL TREATMENT OF TYPHOID FEVER BY "COLD."

By Dr. Frederick T. Roberts, Assistant Physician and Teacher of Clinical Medicine at University College Hospital, &c.

It is in the treatment of cases attended with very high temperature—cases of hyperpyrexia—that the beneficial results of applying cold to the surface, by means of baths, etc., have been most signally obtained; and here it may be said without any exaggeration to have saved the lives of patients who must inevitably have died had not this method of treatment been adopted.

Several German physicians have spoken highly of the treatment of ordinary cases of various fevers, and among them of typhoid fever, to which disease I desire now to call attention more particularly. In a paper on typhoid fever in the recent volume of the St. Bartholomew's Hospital Reports, Dr. Gee considers the use of external cold in its treatment, but apparently rather from a hypothetical point of view than from any actual experience of its advantages. He implies that, if employed at an early period, during the primary fever, it might control the local intestinal lesion, by limiting the number of follicles involved; while in a more advanced stage it might be useful in reducing the secondary fever which accompanies the morbid changes in their progress.

The conclusions of those observers who have practically tested this method of treatment deserve our thoughtful attention, and it is important to ascertain what they affirm respecting it. None of those who are reliable pretend that they can actually *cure* typhoid fever, either in the sense of checking the disease at the outset, or even of shortening its course. To talk of *curing* or *arresting* this complaint shows a want of knowledge as to its nature. At the best, we can only guide it in its progress, and endeavour to bring the patient successfully through the dangers which he has to encounter. This remark applies not only to the treatment now under consideration, but to any other which claims an influence of this kind over typhoid. Some believe that the convalescence is more rapid after the treatment by cold; but others deny this. So also is there a difference of opinion as to whether it affects the more prominent symptoms, such as diarrhœa, tympanitis, intestinal hemorrhage, &c.; some asserting that these are beneficially influenced, others that they are not. All seem to agree that it does not increase the tendency to lung-inflammations, or aggravate these if they already exist. The most important statement made is, that this method of treatment has greatly reduced the mortality from typhoid fever, particularly when the cases have been treated from an early period. Certainly the returns made show a great difference in this respect, when the past is compared with the present, and seems to indicate a highly satisfactory result. At the same time, before any certain conclusion can be arrived at, a large number of cases ought to be taken into consideration; for it often happens that a series come under treatment which are of a mild type, and the mortality may present a very low percentage, whatever treatment may have been adopted; while some epidemics are very fatal. Judging from personal experience and combining hospital with private practice, I believe that the rate of mortality has not been higher in the cases which have come under my own notice than it is represented in the German returns. The mortality in former times was decidedly high, and it would be well to know what modes of treatment were then adopted, as they were not always of a harmless character in days gone by, while the diet and hygienic conditions—most important elements in the treatment of typhoid—were not attended to then as they are now.

Those who adopt this plan of treatment are anything but agreed as to the details of carrying it out. The principal methods employed are frequent cold or tepid sponging of the skin, wet-packing, cold baths, affusion, and tepid baths gradually cooled. Some pursue the treatment vigorously in all cases; others only when the temperature reaches a certain height. There are also differences as regards the duration of each application, the frequency of their repetition, and the length of time during which they are continued.

I venture to state briefly the conclusions which I have arrived at with respect to the treatment now under consideration.

1. It is highly desirable that the members of our profession should be more generally impressed than they are at present, with the usefulness of the various modes of applying cold to the surface of the body in febrile cases, under certain circumstances; and that they should be prepared without hesitation to carry one or other of them out efficiently whenever this plan of treatment is indicated. This applies to typhoid in common with other fevers.

2. On the other hand, to adopt a routine hydropathic treatment of any fever seems to me most objectionable, and this applies especially to the more severe methods which are advocated. As already remarked, they are not easily carried out in general practice; they are certainly not required in a large proportion of cases; most of them are anything but pleasant to the patients, and they may prove very trying and exhausting, especially if frequently repeated, as they usually need to be, if the treatment is efficiently fulfilled; while it must be remembered that they are not harmless measures, but may have a powerful influence for evil as well as for good. With regard to typhoid, many cases do not come under observation until it is too late to attempt to check the primary fever, even supposing that the intestinal lesion could be thus limited. For these and other reasons I do not see that, at present at least, a hydropathic treatment of typhoid fever in general practice has any claim to our support. If it is thought worthy of trial, it ought first to be fairly tested in *bonâ-fide* cases of this disease, and under the strictest and most competent supervision. With regard to sponging of the skin, I believe that this is often very useful, and ought to be employed far more frequently than it is at present, in typhoid as well as in other fevers. With proper care it does no harm, while it often gives much relief, and is beneficial in other respects.

3. The cases in which the more severe methods of applying cold are indicated are those in which the temperature is already very high, and remains so, or shows a tendency to rise rapidly, especially if at the same time there are signs of much nervous disturbance. Unquestionably this plan of treatment is not resorted to under these circumstances nearly so frequently as it ought to be. It is difficult to lay down any exact rule as to what temperature indicates the necessity for adopting it, but if it reaches to 106° F. and shows no tendency to fall, or, still more, if it continues to rise, this treatment deserves due consideration. Necessarily much will depend on the actual condition of the patient, and every case must be thoroughly considered in all its features. The best method seems to me decidedly that of placing the patient in a tepid bath, and gradually cooling this. Affusion over the head is useful if there are marked nervous symptoms. Of course it is imperative that this treatment should be always conducted under the strictest supervision, and its effects carefully watched.—*Practitioner, Jan.* 1875, *p.* 12.

8.—ON THE COLD WATER AND ANTISEPTIC TREATMENT OF TYPHOID FEVER.

By Dr. Henry Blanc, Surgeon-Major H.M. Indian Army.

[In typhoid fever, as in other zymotic diseases, the employment of cold and of antiseptics is theoretically indicated, seeing that an elevated temperature favours the development of the contagious matter, upon the growth of which it and they depend.]

Dr. Brand's (of Stettin) treatment of typhoid fever is based on the theory of fermentation. His method, however, is equally acceptable if we believe in the germ theory of disease, as most agents that arrest fermentation will hinder the growth and development of such low organisms as minute portions of bioplasm. Dr. Brand endeavours to maintain the temperature of the body below fever heat. His *modus operandi* (as described by Dr. Glénard, of Lyons, who during his captivity at Stettin, witnessed ninety-three cases of typhoid fever treated by Dr. Brand himself) is the following:—

At the beginning of the disease—end of the first or beginning of the second week—the patient is placed up to his neck in a bath at the temperature of 68° F., and at once cold water—43° to 47° F.—is poured over his head; an important point, specially when cerebral symptoms are present. The following days, when doubtless the nervous system will be less excited, water at the temperature of the bath will suffice for the douche. The douche should be continued during a couple of minutes; the assistant will afterwards rub and shampoo under the water the limbs of the patient during some three or four minutes; the patient is then to be left quiet. By that time a transformation can already be observed in him. He was, perhaps, unconscious when placed in the bath; he now begins to complain, the tongue gets moist, the face assumes a more natural appearance, and the previous drowsy, stupid look gives way to an expression of astonishment and fear. After the patient has been some eight minutes in the bath, he is seized with a violent rigor; the teeth chatter, he pants for breath, and violent and repeated fits of coughing are followed by the expectoration of thick bronchial mucus. Frequently there is an involuntary stool. The patient by this time feels anxious, and endeavours to get out of the bath, but the physician must here more than ever remember Dr. Brand's aphorism: "The patient will shiver and chatter his teeth, but he must remain fifteen minutes in the bath." If the rigor appears early, the bath should last only fifteen minutes, and somewhat longer should the shivering appear later. Before removing the patient from the bath, the head-douche should be repeated.

Taken out of the bath the patient can stand supported by the assistant. He is trembling with cold, his skin marbled, shaking like a leaf beaten by a strong wind. He is at once carried to his bed, and his shirt should be put on without previously wiping him. A woollen blanket has been prepared to wrap up his feet, the mattress and pillow should be sufficiently hard as not to be depressed by the weight of the body. A single sheet should be thrown over him in summer, a light blanket in winter. Next a cupful of tepid broth should be given to him, followed by a mouthful of good old wine. He is then to be left perfectly quiet. The shivering will last from twenty minutes to nearly an hour.

The cold baths are repeated about every third hour, day and night, until the temperature in the rectum measures only 101° Fahr. The patient's diet should be served tepid, and consist of milk, tea and milk, mutton and beef broth. Every half hour he should drink a mouthful of iced water, and where much prostration is present he should be allowed a little good wine before each bath. Cold-water enemas are also administered in some cases.

Dr. Brand applies his method to all cases, and during all the stages of the disease; he admits but one exception—perforation of the bowel, a condition which requires perfect rest.

Such is Dr. Brand's method, and the results obtained by it are excellent.

Dr. Béhier, Professor of Medicine at the Hôtel Dieu, Paris, has given Dr. Brand's method a fair trial, and from what he has observed he concludes that under the influence of the cold baths the respiration is easier and more regular, the heart contracts with more vigour, the secretions reappear, the tongue gets cleaner, and the thirst and meteorism lessen.

Dr. Glénard's opinion is the following:—"You will not find in the five or six thousand cases of typhoid fever treated by this method one single unsuccess among those which have been submitted to it since the beginning of the disease."

Up to 1868 Dr. Brand had treated 170 patients by cold baths, and obtained 170 cures; and in the year 1870–71 he had 89 cases and 89 cures. Dr. Glénard records 52 cases and 52 cures; and Dr. Huchard states that all the physicians who have carefully followed Dr. Brand's method have mostly successes to register.

The following table of Wunderlich (quoted by Dr. Huchard) gives the general results of Brand's method compared with other systems of treatment:—

Name of author.	Mortality in typhoid fever.	Mortality in typhoid fever where Brand's method has been applied.
Wunderlich	18·1	7·2
Jurgunsen	30·2	7·5
Liebermeister and Hagenbach	26·2	9·7
Rugel	20	4·3
Stöhr	20·7	6·6

To ensure success Brand's method should be rigorously applied from the beginning of the disease; sometimes the treatment will require from 50 to 200 cold baths. If the treatment be begun only when the pyrexia has reached its height or at an advanced stage of the disease, then the results are far less favourable. The duration of the disease is not lessened by this treatment; convalescence does not begin before the twenty-first day; it is, however, shorter and easier, free from accidents beyond an abundant crop of boils. Bedsores are always avoided (Huchard).

A priori, it would seem that we could desire nothing better than the cold-water treatment, and that Dr. Brand is correct when he declares that, in future, classical authors will be able to omit the chapters on the prognosis and on the complications of typhoid fever. I believe, however, that we can do better still if we unite with the cold-water treatment the internal administration of antiseptics; then, not only will all complication be equally absent and the prognosis still highly favourable, but, what is of no small consequence, the duration of the disease will be shortened, whilst the patient will be spared the inconvenience—to use a very mild expression—of a considerable number of cold baths.

Dr. Brand and his followers limit their treatment to the action of cold: cold baths, cold drinks, cold enemas. A low temperature, it is true, arrests the development of organic matter; but other agents are endowed with the same power even to a higher degree. We should not lose sight of the fact, proclaimed by Brand himself, that the cold-water cure only succeeds when employed from the first appearance of the disease—before, consequently, the development and growth of the morbid germs. After the disease has made some progress, the action of cold is limited to the abstraction of abnormal heat—a point we should by no means overlook or undervalue; but the organic poison has already produced considerable mischief, and the issue of the case is not favourable.

If, however, whilst we avail ourselves of the advantages we obtain from the employment of cold we administer at the same time internally substances which arrest the growth or destroy the vitality of morbid germs, we shall then not only force the disease to run a favourable course, but also considerably shorten its duration.

I have examined the action of cold alone in the treatment of typhoid fever, and before speaking of the combined action of cold and antiseptics, I will say a few words on the employment of these substances, unaided by the influence of a low temperature.

Niemeyer states: "After the accurate observations of Wunderlich we can scarcely doubt that by this remedy (calomel) we may in some few cases cut short the disease (according to Wunderlich one or two five-grain doses are enough), and that in the great majority of cases where this remedy is given during the first week, and before the occurrence of much diarrhœa, the course of the disease is rendered *milder* and *shorter*. The experience of Pfenffer's clinic, as well as my own, perfectly agrees with Wunderlich. . . . . Willebrand has lately recommended iodine as a specific in typhoid, and the results published by him, Liebermeister, and others, urge us to make more trials with the preparations of iodine in this disease, although the treatment is not a new one. . . . . It is said that even after one, two, or three days of this treatment there is a decided remission in the temperature, sordes do not come on the gums, or they disappear early; the fever ceases in an *unusually short time.*"

The subchloride of mercury and iodine are both powerful antiseptics. In typhoid fever this property of theirs can alone account for their special action, and for the early subsidence of the disease. Other antiseptics, such as the sulphate of quinine, dilute sulphuric acid, the chloride of aluminium, &c., find a suitable employment in typhoid fever, as they combine antiseptic and tonic properties. But if, instead of making use of one method only, we employ both at the same time—each of these treatments being good individually—united the result must be still more favourable. In fact, it is so, and when in practice we apply these rational views, we find that typhoid fever is the most manageable of diseases.

I beg to be allowed a short digression from my present subject, in order to illustrate the great clinical value of the combined cold and antiseptic method of treatment of another specific disease—malarious remittent fevers. In typhoid fever it is often difficult, when the disease has been cut short, to impress upon others our conviction that we had to deal with a true case of typhoid. Malarious fevers are not open to this objection, and for that reason I will give the result obtained in them by this treatment.

During the Chinese War of 1860–61 I was for a time in medical charge of a battery of Royal Artillery and of a company of Royal Engineers. Remittent and continued malarious fevers of the worst type raged in the camps. The treatment I put in use consisted in the external application of cold (cold-water packing) and the internal use of antiseptics—namely, alcohol, quinine, dilute sulphuric acid, &c. I did not lose a single patient, whilst all around me death was daily carrying away many victims. Again, in India the same treatment was always successful in my hands. Amongst the severest cases that I remember was that of a young English lady, who, forty-eight hours after her confinement, was stricken down by remittent fever of the comatose type. When I first saw her, on the fourth day of the disease, I found her lying in a dying state in the town of Gogo (a half European town situate on the shore of the Gulf of Cambay), where she had been sent some weeks previously for the health of her eldest child. The thermometrical range had in her case reached a height hardly compatible with life—between 109° and 110° F. Sheets dipped into cold water were immediately wrapped around her, and the temperature of the wet sheets kept low by means of constant ventilation; quinine and brandy were administered frequently and in very large doses. During twenty-four hours the struggle between life and death went on, but she came out victorious, and before many days entered on full convalescence.

In typhoid fever the combined treatment gives the same favourable result; I will refrain from mentioning a few cases where I fully believe the disease was cut short by this method, as the pathognomonic signs had not time to develop themselves, and my conviction might not be shared by others. Fortunately the following case can give rise to no objection concerning the real nature of the disease; pulse, temperature, rose spots, bronchial râles, &c., all proclaim it to be a case of typhoid fever.

On the 8th of April last I was called upon to attend a Mr. P——, an

American gentleman staying at the Grand Hotel, Paris. For four or five days he had considerable fever, had kept to his room, but had not taken any medicine beyond a few aperient pills. Previous to his keeping to his room, for some weeks he had felt out of sorts; he had suffered from headache, lassitude, loss of appetite, erratic pains in the limbs, restlessness at night. I found him in the following condition: skin warm, pulse frequent, tongue coated in the centre, the point and margin red and dryish; slight cough; sibilant and a few moist râles; increased dulness in splenic region; no gurgling in iliac fossa, but great tenderness on pressure; stools somewhat frequent, loose and scanty; urine high-coloured; fæces pale; no head symptoms beyond a feeling of lassitude and drowsiness. I prescribed five grains of calomel at bed time, and an effervescing draught.

April 9th. About the same; skin warm and dry; pulse frequent, compressible; two semi-liquid motions since yesterday; much tenderness in right iliac fossa; cough not very troublesome; expectoration of some thick mucus; a few moist and sibilant râles posteriorly; splenic dulness well marked; about a dozen rose spots on abdomen and chest. Ordered two baths at 77° Fahr. Iodine, six grains; iodide of potassium, twelve grains; water, one drachm: five drops in a wineglassful of water every third hour. Sulphuric-acid lemonade; fresh milk taken cold; ice, soup, two ounces of brandy in the day with ice and Vals water.

10th. Complains of pain in the splenic region; the liver is somewhat tender on percussion, and its normal dulness increased; sibilant rhonchi heard in both lungs posteriorly; much tenderness and slight gurgling in right iliac fossa; urine scanty and high-coloured; stools scanty, semi-liquid; tongue in the centre covered with a brownish fur; another eruption of rose spots is seen this morning; the first eruption is still well marked; pulse frequent; skin warm. Continue drops and mineral lemonade. Four grains of quinine to be taken in two doses in the morning. Two baths at 68° F. Diet as above.

15th. Case progressing favourably. Since the 12th no further eruption of rose spots; no diarrhœa; slight meteorism; no head symptoms; rests well at night; appetite good; asks for more food. Omit cold baths; continue treatment; early next morning to take a tumbler of Friedrichshalle bitter water. Diet: rice pudding, soup with vermicelli, cold milk, and two ounces of brandy.

17th. Improving greatly. Omit iodine drops and mineral lemonade. Diet: fish, soft-boiled eggs, soup, &c.; a glass of good Burgundy wine at meals.

20th. Sat up part of the day. No frequency of pulse or heat of skin; urine clear, abundant; appetite good; tongue cleaning; feels somewhat weak, otherwise is quite well. Omit quinine. Ordered tincture of nux vomica, dilute nitric acid, of each eight drops in a wineglassful of water, before meals; a tablespoonful of wine of phosphate of lime after meals. Diet: chicken for breakfast, lamb cutlets for dinner, Burgundy wine.

24th. Quite well; took a drive yesterday, gaining strength rapidly.

Instead of lasting twenty-one days, as typhoid fever does where Brand's treatment is alone employed, here, under the combined influence of cold and antiseptics, both temperature and pulse fell on the fourteenth day. The convalescence was exceedingly short, and the recovery both good and complete.—*Lancet*, *Jan.* 23 *and Feb.* 6, 1875, *pp.* 122, 190.

9.—THE WET SHEET IN SCARLATINA.

By John Taylor, Esq., Liverpool.

As the present high rate of mortality from epidemic scarlatina may justify practical suggestions prompted by experience, I feel it my duty to endeavour to excite the profession to a reconsideration of the remedial powers of the wet sheet as an auxiliary in promoting cutaneous elimination.

Though all agree as to the importance of promoting and sustaining cutaneous elimination in the prevention of cerebral, spinal, and other congestions, and, at a later stage, the disintegration of mucous membranes, dropsy, and glandular enlargements, yet this simple, powerful, and ready-at-hand auxiliary is unappreciated. Forty years' experience has assured me that this plain or medicated vapour-giving envelope affords the best *external* means for eliminating scarlatinal poison and preventing destructive sequelæ. It promptly suppresses pyrexial heat and itching; produces sleep, with a soft secretive skin, more or less continuously; and enables the digestive organs to accomplish that great desideratum in the treatment of scarlatina—viz., absorption of highly nutritious food. It may be repeated, on the recurrence of the febrile paroxysm, two, three, or four times in twenty-four hours, the patient remaining enveloped from half an hour to an hour. Mothers and nurses who have witnessed its efficacy are most earnest in its repetition. My plan of procedure is to immerse a nightgown, slit up at the front, in hot water (half a pint to a pint), pure, or medicated with a drachm or two drachms of tincture of capsicum, or in the infusion of three or four pods; or in mustard-water, the clear supernatant fluid from a tablespoonful of mustard to a pint of water; extending the gown over the feet by means of a towel immersed in the same fluid, both to be well wrung out and suddenly applied, and the patient quickly packed in two blankets previously placed on the adjoining sofa or bed; another blanket, or two pillows, or an eider-down quilt covering all.

The medicated packing is preferable in the incipiency, and at any other time to evoke the rash, and in cases of cerebral oppression, with pale skin, low pulse, and delirium. Last month I had a case of this type, in which the mustard packing was applied. It did not elicit the rash, but it cured the delirium, raised an alarmingly depressed pulse, and restored the excretions. This effect was solely dependent on the medicated packing, as the patient, a girl of thirteen, could not swallow medicine or food, and enemata had not then been administered. With the aid of a tonic she made the best recovery of three in the same family, and had no sequelæ.

The auxiliary mode of treatment here defined is by no means intended to exclude the ordinary plan which every practitioner's experience has led him to select and rèly upon; but I am of opinion that if packing is judiciously incorporated with such reliable treatment, it will be the means of saving many lives that would otherwise be lost, and of diminishing the severity and duration of the sequelæ.

I further believe that in other cases of blood-poisoning the exhibition of medicaments cutaneously by vapour would in some degree neutralise the poison, aid its elimination, and, as in packing, soothe the whole nervous system. During a cholera epidemic in Liverpool I had part charge of a district where nearly all who first went into the hospital died. One woman, with cholera in the malignant form, was packed in a wet sheet, with half a pound of mustard, and remained enclosed six hours, notwithstanding her imploring entreaties to be released. She drank copiously of iced water. The vomiting, purging, and cramps began to abate in two hours, and had ceased when she was unwrapped, presenting the ordinary lobster change from blue to red. Gastric fever, with great thirst, ensued for several days, when she recovered as a brand plucked from the burning.

Modern parliamentary mustard, deprived of capsicum and other adjuvantia which made it formerly a condiment so famous, would not have answered the purpose. Doubtless, *persevering cutaneous elimination* is a great medical power.

Not only as an eliminator may the wet medicated envelope be used, but as an antispasmodic in the relief of pain and irritation in any of the membranes, mucous, submucous, or serous; with the aid of chloral, morphia, conium, belladonna, nux vomica, &c., dissolved in the water, or sprinkled on any particular part of the wet sheet. It has the merit of antiquity from the ancient Romans, and among the farmers of Great Britain for the relief of colic, and the inflammatory diseases of cattle. A sheet, wet with some herb decoction, or water sprinkled with turpentine, was thrown over the suffering animal, and enveloped by blankets, quilts, and overcoats, snatched from the beds on which "the rude forefathers of the hamlet slept." And, doubtless, many a pang was thus allayed and many a life preserved. Modern experience has witnessed the amazing relief procurable from the wet sheet in its simple form, in pyrexial and glandular disorders, and from the medicated form in the zymotic and spasmodic affections. In stridulous croup, for instance, I have seen the mustard sheet act magically after other means more orthodox had failed. Its power is also potential in diphtheria simulating croup, and, in strong doses, in inflammatory croup, sometimes averting the impending tracheotomy knife.

The suggestion to use this auxiliary plan of treatment should not be slighted because of its antiquity or of its having been used empirically. Many blessings, moral and physical, have fallen into desuetude, and require revivals to awaken a consciousness of their existence and utility; and this is one of them, lying neglected within our reach. Objection would be rational if the more primitive plan of enveloping the suffering man or beast within the skin of a newly killed animal were recommended; but when one so simple and close at hand, so easily adapted, so soothing, and so powerful as an auxiliary in the routine of medical treatment, is recommended, suffering humanity should have the benefit of it, especially where no self-interest prompts the recommendation—except the satisfaction of doing good by presenting the cup of cold water so typical of charity.—*Lancet*, *Nov.* 14, 1874, *p.* 692.

10.—ON CERTAIN POINTS RELATING TO THE ETIOLOGY, PATHOLOGY, AND TREATMENT OF DIPHTHERIA.

By Dr. George Johnson, F.R.S., Professor of Medicine in King's College, Senior Physician to King's College Hospital.

[Diphtheria, though not highly contagious, is doubtless communicable from the sick to the healthy, and it appears highly probable that it may be originated *de novo* by filthy emanations from sewers and cesspools.]

In proof of the contagiousness of diphtheria, the following, amongst a multitude of similar cases, may be set forth.

M. Valleix, a colleague of Trousseau, while examining the throat of a patient, received into his mouth a small quantity of saliva spurted out by the patient in coughing. Next day, on one of his tonsils there was a pellicular deposit, and some hours later both tonsils and the uvula were covered by false membrane; the disease made rapid progress, and in forty-eight hours he died. Another of Trousseau's provincial colleagues was performing tracheotomy in a case of diphtheritic croup, when he applied his mouth to the wound to suck blood from the trachea. He thus inoculated himself, and died in forty-eight hours.

Sir William Jenner states that Dr. E—— lived in Euston Road. He was attending a child ill from diphtheria, when he sickened with the same disease. As he recovered his attendant was attacked with it. No one in his house suffered except Dr. E—— and the young woman who was in constant attendance upon him. The child from whom Dr. E—— appeared to have caught the disease resided some distance from Euston Road.

Mr. Simon's second report to the Privy Council contains the following piece of evidence:—"No case (says Mr. Eastes) of diphtheria had ever been seen in Folkestone during my time, until Isabella W——, aged four and three-quarter years, arrived from Boulogne on the evening of July 2nd, 1856, being then in an advanced stage of the disease. She died on the following day. On July 6th, Catherine W——, her sister, aged ten, was attacked. But she had never been in France, she had always resided on the East Cliff, Folkestone, in the same house to which her dying sister was brought four days previously. One other case occurred in the same house three days after, and they all terminated fatally."

In the same report, Dr. Rumsey, of Cheltenham, states that "a schoolboy convalescing from diphtheria contracted by him at Swansea, where it was epidemic, and arriving at home in an open healthy suburb of Cheltenham, where at the time there was no diphtheria, was received and embraced by one of his two sisters. On the fourteenth day afterwards she was attacked by diphtheria, and suffered severely. Her sister, who did not meet her brother, helped to nurse her, and was attacked fourteen days after the first sister by the same specific disease."

Trousseau gives a case of direct inoculation of the mother's nipple by a diphtheritic sucking infant. The nipple became covered by false membrane, but the disease was arrested by appropriate treatment.

I have to thank Dr. Dewes, of Coventry, for the following brief statement of very instructive facts:—The younger of two brothers, a boy named Arthur, was taken ill at home with scarlet fever on the 8th of November. As his mother was expecting her confinement he was sent to a cottage on the outskirts of the town, where he had a severe attack, with a copious eruption and diphtheritic exudation on his fauces, but not in his larynx. Meanwhile, the elder brother, Alfred, was taken ill at school on the 16th of November. Both boys had attended the same day-school; and at the same time some of the other boys were ill at home with scarlet fever. As the schoolmistress was a relation of the boys, it was arranged that the school should be dispersed and the boy nursed there. He had scarlatina anginosa, but no diphtheritic exudation, and he became convalescent about the 25th of November. On the 5th of December the man at whose cottage Arthur was staying sickened with scarlet fever, and he, like the boy, had also a diphtheritic throat. It now became necessary to remove the boy from the cottage, which was done on December 6th or 7th. As the two brothers had been convalescent for a fortnight they were both allowed to occupy the same room at the schoolhouse, and, although separate beds were provided for them, they soon got into the same bed. They were not allowed to leave the bed, and all went on well until the 18th of December, when Alfred was observed to have a croupy cough, with bronchial râles throughout the chest. On the following day he was much worse, the croup and the bronchitis hourly increased in severity, there was a diphtheritic exudation on the tonsils and the uvula, and he died on the third day from the onset of the croupy symptoms. In neither case was the urine albuminous at any period of the illness. The most probable explanation of these facts appears to be that at the cottage, where the first boy, Arthur, was nursed there was some sanitary defect which caused the scarlet fever to be complicated with diphtheria. The result of bringing the two boys together was that Alfred caught a fatal diphtheria from his convalescent brother.

The following case came under my own personal observation. In May, 1867, a gentleman living in one of the largest houses in Westbourne Terrace was under my care for diphtheria. During his illness, a gentleman from the country, who was staying in the house, spent much time in the patient's room, and helped to nurse him. When the patient was convalescent his country friend sickened with what proved to be a severe attack of diphtheria, from which he recovered at his country house.

The following history I received from the father of the children referred to. About four years ago, a girl, aged fifteen, was sent home to a large house in an open park in Hertfordshire, after having been ill for ten days at a school at Brighton. It was noticed that for some days after her arrival she had a discharge from the nostrils. As no warning was given that she had been suffering from an infectious disease, she was allowed to associate with her seven brothers and sisters. After she had been about a week at home the schoolmistress wrote to say that she felt anxious to hear of her pupil, as there had been some cases of diphtheria at the school. In about another week, a sister aged ten, and a brother aged four, were seized within a day or two of each other with symptoms of diphtheria, and in a few days they both died. The children were isolated as soon as they sickened, and no other case occurred. In this case there can, I suppose, be no doubt that the young lady when she arrived at home was suffering from nasal diphtheria, and she thus became the vehicle of a fatal infection to her brother and sister.

I believe that all the cases which I have here cited are examples of the diphtheritic infection being conveyed either through the air or more directly by the actual contact of the morbid secretions with the tissues of the recipient.

To oppose to positive evidence of this kind, such negative statements as that in numberless instances medical attendants and nurses have come into close contact with diphtheritic patients without taking the disease, appears to me a vain and frivolous objection. Diphtheria is not a highly contagious disease. In the scale of infectiousness it stands far below scarlet fever, for instance, and there is reason to believe that the susceptibility to the disease differs almost infinitely in different persons; but a medical attendant who entirely ignores the contagiousness of the malady is likely to neglect reasonable and necessary precautions to protect himself and others from the risk of infection.

When a case of diphtheria occurs in a house without evidence of importation from without, still more when several cases occur together or in quick succession, there will be good reason to suspect that sewers, cesspools, or contaminated water may be the source of the disease. My belief is that in a very large proportion of cases there is as close a relation between diphtheria and insanitary conditions as exists between typhoid and similar insanitary conditions; and I scarcely need say that if this be so the general recognition of the fact is of the greatest importance with reference to the adoption of preventive measures. There is reason to believe that much more harm would result from ignorance of the filth origin of diphtheria than from practically ignoring its infectiousness.

Many instances have come to my knowledge in which fetid fæcal emanations have appeared to be the direct cause of diphtheria. I will refer to a few of these.

The first cases of diphtheria that I remember to have seen occurred in the persons of two children of a village tradesman in Kent, in October, 1855. They were both taken ill simultaneously; one, a girl, aged nine and a half years, got laryngeal symptoms and died; her sister, aged six years, got a diphtheritic patch on one tonsil, and was quickly well. Another sister, aged seven, had died on the 1st May previously, after a week's illness, in which sickness, sore throat, and a very offensive discharge from the nose were the chief symptoms. No other cases had occurred in the village up to this time. The house stood by itself in a garden; there was no drainage. From what I have since seen of diphtheria, I have no doubt that the cause of the disease in these three children was the effluvium from a copious and most offensive fæculent accumulation beneath a common open privy in the garden, to which the whole household resorted.

In January, 1872, I saw with my friend Mr. Bateman, of Richmond, a lady, Mrs. B——, who was suffering from a diphtheritic throat. Mr. Bateman has kindly sent me the following note of the circumstances:—"The lady you saw with me at Ham was one of a family consisting of herself, her husband, four children, and three servants. The house is drained into a cesspool about twenty yards distant. The accumulation of many months was emptied one day while the wind was blowing towards the house from the cesspool, and a very offensive smell reached the house. Three days afterwards all the four children became feverish and complained of sore-throat; the tonsils were seen to be inflamed and covered with yellowish-white patches. In a few days two of the servants were attacked, one rather severely; and, lastly, Mrs. B——, the lady you saw with me. Her tonsils were inflamed and covered by false membrane. The only members of the family who escaped were Mr. B——, the husband, who was away from home all day, and one servant." All the patients recovered.

When Mr. Bateman wrote me the history which I have just read, he went on to say, "I have been called lately to a similar set of cases. The family consisted of the father and mother, seven children and three servants. On going up the garden to the house my nose was assailed by a horrible stink, and, seeing some men at work close to the house, I stopped to see what they were doing. I found that they had ripped open a drain running in front of the house within ten yards of it, and they had opened a cesspool into which the drain flowed. I found the mother, five of the children, and two of the servants suffering from sore-throat identical with the Ham cases." In the same letter he says, "I am at the present time (January, 1874) attending at another house where a young lady and the parlour-maid are suffering from severe sore-throat with the usual patches. A cesspool had been opened a few days before quite close to the house. I feel quite certain that all these cases were caused by the sewage filth, and in particular by that portion of it which, floating in the atmosphere, was respired by the persons affected."

I am indebted to my friend, Dr. Casey, of Windsor, for the instructive particulars of a succession of cases of diphtheria in a family at the village of S—— from Nov., 1872, to May, 1873. "The family consisted of father, mother, and nine children, aged from twelve to one and a half. The house is detached, and out of the village. There were no cases in the immediate neighbourhood, though the disease occurs there with, I think, more than average frequency. During November, 1872, two of the children (Nos. 6 and 7) passed through attacks of diphtheria of moderate severity. A week or so after their seizure (Nov. 24th) their mother, who was nursing them, was attacked by the disease in an almost malignant form, and died on Dec. 1st. After some days the five elder children were sent away, and some steps were taken to repair drains and disinfect. Six weeks after (Jan. 15th, 1873) the baby and a servant fell ill, and the former died (Jan 23rd). Then the three children remaining in the house (two of them convalescents) were sent away. The house was now most energetically disinfected, and drains examined. After the lapse of ten weeks all the children returned (April 9th). A week after their return their uncle visited them, slept in the house two nights (April 15th, 16th,—17th), and returned home on the evening of the 17th. During his journey home to Worcester he felt unwell, was worse, restless and sleepless during the night, next day decidedly ill, and on the morning after that (19th) a patch of diphtheria was recognised. The attack which followed was a mild one. Six days after the uncle's visit, (April 22nd) the youngest child showed the disease. This child had remained in the infected house until the second outbreak (January) and had since that been away with the two convalescents. The children were again removed; Nos. 1 and 4 to one house, and the rest (Nos. 2, 3, and 5) to another. But of the latter, two more (Nos. 2 and 3) were attacked in a few days (April 25th) in succession; and more than a fortnight after removal from home yet another child (No. 5) fell ill (May 11th.) This was the last and tenth case, two only of the children (Nos. 1 and 4) having escaped. And now, at last, the foul remains of a disused cesspool were found under the floor of the drawing-room, which room, I may add, had from the first been suspected of bad smell. After that had been remedied all the family shortly returned, and have continued well. The last case must, seemingly, be ascribed to *personal* contagion, for it occurred after the child had been for more than a fortnight away from the original source of infection, and in a presumably healthy farmhouse. On the other hand, the uncle's attack was almost certainly owing to *endemic* infection, for the lapse of time (ten weeks) and the vigorous measures adopted to purify the house (which was, when he slept in it, still bare of carpets and papers) renders the supposition that contagious matter from the previous cases lingered in the house and furniture improbable."

It appears to me to be a matter of almost absolute certainty that the foul cesspool was the primary source of all these cases. It is possible, and not unlikely, that the mother may have caught the disease from the two children who were the first sufferers; and it is still more probable, as Dr. Casey suggests, that the last case, which occurred a fortnight after the removal from the pestilential house, was the result of contagion from the other children at the farmhouse. It is well to note that not only was the house detached, but the cesspool had long been disused. It appears therefore scarcely possible that a specific diphtheritic poison could have got into the cesspool from without: the poison must have been compounded within the precincts of that foul receptacle. Some time since I told the story which I have just now read to a medical officer of health, and he expressed his belief that the cesspool had nothing whatever to do with the diphtheria! His incredulity affords a good illustration of the very different impression which is produced upon different minds by the same evidence.

My friend Mr. Salter, of Tolleshunt D'Arcy, in Essex, who has had a large experience of diphtheria, writes to me that he has "had unquestionably a great many cases of diphtheria, whose origin can be distinctly traced to sewage poison, either gaseous or liquid," and he gives me some particulars of an outbreak in one family, four children and a nurse having been attacked in quick succession, which he attributes to the percolation of sewage into the well which supplied the family with water.

I look upon the occurrence of an indigenous case of diphtheria in a house as an indication of the necessity for a most rigid inquiry into the condition of the drainage and the water-supply. At the beginning of the present year a gentleman living in one of the best houses in Queen's-gate asked me to see his butler, whom I found suffering from a severe attack of diphtheria. The basement of the house looked the perfection of cleanliness, but I advised that a sanitary engineer should be called in to inspect the premises. The result was the discovery of an untrapped sink-pipe near the butler's sleeping-room.

It is notorious that in the houses of some of the most exalted and wealthy, and in open country districts, the sanitary defects which originate such diseases as diphtheria and typhoid fever are almost as common as in the meanest cottages and in the most crowded cities; but it is obvious that overcrowding in the small rooms and cottages inhabited by the lower classes must greatly increase the danger arising from other insanitary conditions.

In opposition to the doctrine which I am now advocating, it is sometimes stated with perfect truth that diphtheria never visits some houses which are dirty within and without, and which are surrounded by every form of abominable filth. The reply to this is, that no one believes that any and every kind of foul emanation from decomposing organic matter will suffice to cause diphtheria. As every black powder containing charcoal is not the explosive compound which we call gunpowder, so every fetid gas escaping from a drain or a cesspool is not laden with the perilous stuff which will excite diphtheria. We believe that a combination of conditions, local and atmospheric, is required to generate or develop the morbid poison, and the absence of any one of these may prevent its formation. I learn from Mr. Salter that on several occasions, after his district has been free from the disease for many months, he has "suddenly been called to three or four cases in *one day*, at distances of ten or twelve miles apart." Such an occurrence can be explained only by the theory of some widely diffused atmospheric influence concurring probably with local insanitary conditions. Mr. Salter tells me that although he has "had cases occurring in every month of the year, July, August, and September seem to be the months chiefly preferred by the disease." These are the months during which, in consequence of the high temperature, the decomposition of organic matters would generally be most active. The analogy of other diseases renders it probable that besides temperature there are other climatic conditions which favour the occurrence of diphtheria at one season rather than another.—*Lancet*, *Jan.* 2, 1875, *p.* 8.

11.—ON DIPHTHERIA.

By **Thomas Prangley**, Esq., Aylsham.

[An outbreak of diphtheria occurred at Aylsham in 1868, and this paper is founded on notes of fifty-six cases.]

The variety of forms which the false membrane assumes, and the various conditions of the tonsils, are very remarkable; thus I have seen the membrane in consistence like glazed starch, cream, wet parchment, and a greyish flesh-like pulp of all degrees of colour, from the purest white to almost black. I have seen it in specks, patches, shreds, and in large firm membranes, forming an exact cast of the part it enveloped. I have seen the specks or patches surrounded by a bright red border, or gradually becoming thinner at the edges, imperceptibly losing itself, so that one could not exactly say how far it extended. I have seen the tonsils engorged to such an extent as to almost meet, or enlarged laterally, as if they had been flattened by a weight on their surfaces; and I have notes of one case in which the tonsils were rather depressed. The glands at the angle of the jaws were more or less enlarged; but I never saw them suppurate.

On a few occasions, after the entire disappearance of the membrane, I found the tonsils again speckled all over with small white cheesy spots. These need cause no alarm; for, though they remained *in statu quo* for some days, they always disappeared without further inconvenience.

One of the worst signs in this disease was the extension of the membrane to the nares, so that I looked suspiciously upon the unfortunate patient, who began to use the pocket-handkerchief too freely. This invasion of the nares was manifested by redness of the margin of the nostrils and a discharge of thin mucus, which rapidly became purulent, and, as the disease progressed, very abundant.

Passing over many interesting points in the clinical history of this disease, I proceed to the practical question of its treatment, which resolves itself into —local, directed to the throat itself; general, to combat with the great tendency to depression of the vital powers; and individual means to relieve certain symptoms which may arise during its course.

The local treatment I adopted in every case was the application of tincture of iodine (forty-eight grains to one ounce) to every part of the throat covered with membrane at least once in twenty-four hours, and the inhalation of iodine vapour, mixed with steam, but more especially the latter, if the larynx were invaded. If the membrane were firm in texture, and not too strongly adherent, I always removed it and applied the tincture of iodine to the denuded surface, and with the best results; for, although frequently the membrane would reform, yet it never regained its pristine condition. If the membrane were in specks or shreds, I applied the iodine over them, and in general half-a-dozen applications were all that was required to procure their dismissal, and in several instances two applications were sufficient. This local application of iodine acts not only as a caustic, but, I believe, confers a modifying influence upon the secreting structure, and further brings into action the power of the absorbents; thus tending to retard the spread of the membrane and to promote the removal of that which is formed. I am aware that, in urging this treatment, I am at issue with many who contend that, this disease being a general one depending upon certain changes in the blood by the introduction of a specific disease-poison, it is useless to attack the local manifestation of the disease any more than the pustules of small-pox. To those I would call attention to John Hunter's axiom, that two similar diseases cannot co-exist in the system at the same time. For example, he states that, if you can succeed in changing the nature of an inflammation, you can often cure the original complaint. Higginbottom's method of arresting the spread of erysipelas by vesication with nitrate of silver is a familiar illustration of this Hunterian law; and, if that treatment be effectual in erysipelas, why should not a similar treatment be equally efficacious in diphtheria? Again, I believe that the local manifestation of blood-poison is of itself a great indication for treatment; for do not all poisons have some definite and specific action on some membrane or organ? Thus does not arsenic exert its influence chiefly on the mucous membrane of the stomach, colchicum on the ligaments, cantharides on the kidneys, and strychnine on the spinal cord? Then why should not the throat be the chief seat of the diphtheritic poison, and, if so, why should not the rational treatment be to arrest and destroy it at its first encampment? Again, if my experience be correct, that one of the most formidable symptoms we meet with is the extension of the membrane to the nares and trachea, and, if my opinion be correct, that it does not arise there by an independent centre but by extension of the membrane from the fauces,—is not this an additional reason for staying the progress of the membrane and limiting it to the fauces, whether we adopt caustics or any other means with that object in view ? That iodine possesses this property, I feel convinced; and, as I am not reading to you a treatise on diphtheria, but simply my own experience, I shall not enter into the merits or demerits of the various remedies which have been vaunted by numerous successive writers. The efficacy of any treatment is proved by its results; and, as I have stated, out of fifty-six cases which I have noted, seven died, of which five were moribund when seen, and only two died fairly after treatment.

The general treatment was supporting and stimulating throughout. A liberal supply of beef-tea, wine, and milk was frequently and regularly given, to maintain the system against the natural tendency to depression and exhaustion. In medicine, I rely upon chlorate of potash, and tincture of steel, from three to five grains of the former with five to fifteen minims of the latter every four hours, according to age. When tracheal symptoms arise, I at once have recourse to the inhaler, beginning with ten drops, increasing to a drachm of the common tincture of iodine to a pint of boiling water, and letting the patient inhale as frequently as possible. In using this, one precaution is necessary, and that is not to begin with too large a supply of iodine, otherwise it is too irritating, causing the patient to cough, and making him unwilling to use it. I have found ten drops well borne to begin with; and, after a short time, we may gradually increase the quantity to a drachm to the pint without inconvenience. If this do good, which it undoubtedly does, it is evident it cannot be by any caustic action, but entirely through its modifying and absorbing influence upon the diseased tissue. I can refer to three cases in which this treatment was of marked utility. In cases where the fits of dyspnœa are severe and frequent, I have found nothing like an emetic of sulphate of copper, which generally expels a quantity of membrane from the larynx and trachea, and gives relief for a time at all events.

In tracheotomy I believe we may place considerable reliance, although my experience is limited to one case, and that unfortunately a fatal one; yet I firmly believe that if it be resorted to soon enough, we may rescue many lives. There is no doubt one feels inclined to put it off as long as possible; for parents have a curious repugnance to having their children's throats cut; and, if you are not successful, they speculate upon what assistance you afforded nature in her process of dissolution, and generally the balance is against the doctor; yet the evidence of numerous published cases, of which, roughly speaking, one-fourth were successful, proves that it is our duty not to neglect this chance of saving life, and more especially not to delay too long in resorting to it.

The treatment of the numerous sequelæ is difficult to formulate. I believe time and the *vis medicatrix naturæ* to be our most important agents; yet something can and ought to be done, for it would indeed be cruel to leave a poor patient totally paralysed without the hope of some assistance to the slow progress of nature. In those cases, I generally prescribe the liquor strychniæ in five-minim doses, gradually increased to twelve, three times a day; but I candidly confess I think it often did no good, for I well remember one case in which I gave it for a whole month, the paralysis steadily increasing the whole time. I then left it off, and prescribed a liniment as a *placebo*, when gradual improvement commenced, and recovery ultimately took place; but, on other occasions, I have found it decidedly of service, though I am doubtful whether it be more active than quinine, mineral acids, and other tonics. I believe we must show our discretion by changing our tonics, till we find the one best suited to the individual case, than by habitually using one formula indiscriminately. In addition to the tonic regimen, I recommend, when practicable, a judicious change of air and scene. On one occasion, I had recourse to galvanism, with no satisfactory result. I believe that rubbing and shampooing the limbs is of some service; at all events, it does no harm; and the simultaneous use of a little embrocation no doubt assists the charm. Some of the dyspeptic symptoms I found very troublesome to treat. As a rule, bismuth gave the most relief, combined with bland nourishment; and, when the acute symptoms had subsided, a combination of quinine and strychnine was of marked benefit in giving tone to the digestive organs.

For the tendency to faintings which sometimes occurs, I have given a dose of ether; but what is most important is to enjoin the recumbent posture till convalescence is well established, and even then I recommend a little wine to be taken before any exertion is used.

Having alluded to the general treatment of diphtheria and its sequels, there yet remains to be mentioned other minor points, which are of considerable importance to the suffering individual, by which we may alleviate suffering and hasten recovery. For example, where the patient complains of sore throat, *ab initio*, I have found an iron gargle (two drachms of the tincture to half a pint of water) beneficial; but this I have found too cutting when the membrane has disappeared, and then I have substituted one of borax and glycerine (two drachms of the former and one ounce of the latter to half a pint of water;) and this gargle I have also found very useful to relieve the sensation of bread-crumbs and tickling in the throat, of which complaints are frequently made during convalescence. Where the denuded surface has proved to be ulcerated, a few touches of nitrate of silver assist the process of repair; and in one case where the tongue and roof of the mouth was so sore that everything that was taken gave pain, I found that great relief was experienced by applying dry trisnitrate of bismuth powder with a camel's-hair pencil just before taking food. In paralysis of the soft palate and regurgitation of fluids through the nostril, holding the nose during deglutition will be found very much to assist the act: this a patient of mine found out for himself, and I subsequently confirmed his statement in other cases. In these cases, too, I always advise thick drinks, which are more easily swallowed. When the pharynx is also affected, a large bolus is much more easily passed down than a small one, so that I have advised the collection of all the food in the mouth into one mass before swallowing. This is no doubt accounted for by the weakened muscular fibres of the pharynx being enabled to grasp a large bolus with less contractile effort, than would be required for a small one. In one case, I kept a patient alive for some days by giving the yolk of egg unbroken, and letting it glide down his throat, as it were. These are a few practical hints, which, from what I have seen, I believe to be useful; but the ingenuity of the practitioner will often be put to the test in coping with the anomalous symptoms which sometimes arise during the progress of this horrible, though interesting disease. Much might be written upon this important subject; in fact, a single case will often afford, in its chequered course, abundant matter for a long paper; but I have endeavoured to be as brief as possible, and, with that object in view, have entirely excluded the histories of cases which I should otherwise have liked to introduce.—*British Medical Journal, Jan.* 9, 1875, *p.* 40.

12.—ON THE RELATIONS BETWEEN DIPHTHERIA AND SCARLET FEVER.

By Dr. Arthur Ransome, M.A., Lecturer on Public Health in Owen's College, Manchester.

The following case shows the close connection between these two diseases.

On February 23rd last year, a boy at school had scarlet fever. He was isolated until March 25th, when his brother saw him and took the complaint. Other cases occurred at the school on the 29th, 30th, and 31st. On April 2nd, one of the masters had a rigor and sore-throat; he left at once, and was seen by me next day. On the third day, diphtheritic patches covered the tonsils; but there was no rash. Slight albuminuria accompanied the pyrexia; both disappeared by the seventh day. On April 9th, six days after he arrived at home, his mother was attacked, membranous exudation appearing in both tonsils; but there was no albuminuria, and no rash.

The origin of these cases must surely be traced to the epidemic of scarlet fever at the school; for there were no cases of diphtheria either in the neighbourhood of the school or near their home. The close relationship of these diseases has often been pointed out. In the *Report of the Medical Officer to the Privy Council* for 1859, Dr. Burdon Sanderson gives cases of diphtheria and scarlet fever co-existing; there also I find three cases of diphtheria following three of scarlet fever, and the former spreading to a neighbouring cottage. These diseases have much in common. They are alike in their zymotic or epidemic character; both are characterized by high pyrexia; their chief point of attack is the throat and the glands of the neck; and a rash is found in both diseases. Their sequelæ also are similar: suppuration in the lymphatic glands, ulceration of the ears, arthritic affections with or without cardiac complication, kidney-disease and dropsy, general or localised paralysis of the nervous system. I have seen each and all of these consequences after both diseases.

Some physicians have been led by these points of resemblance to regard them as one disease, the same poison producing different manifestations; but, in spite of their similarity, I venture to think the differences are too important and too numerous to permit so simple a solution of the problem. In the first place, diphtheria is seen to arise directly from scarlet fever. I have never known the converse action. There are other etiological differences. Though both are contagious, diphtheria is less so, and more frequently occurs in single cases. Where several cases occur together, some general cause is probably concerned. Scarlet fever is more frequently conveyed by clothes or other fomites, by attendants on the sick, and it may be conveyed by means of milk. I am not aware that diphtheria has ever spread by any of these means. The two diseases differ in their geographical distribution. Diphtheria is common in India, where scarlet fever is unknown. Colonies and all new settlements seem peculiarly liable to diphtheria; it has appeared in the Australian colonies and in South America, attacking the otherwise healthy town of Buenos Ayres. In Lima, it was noticed that the black races withstand its contagion. It selects high and well-drained districts, when low-lying lands in the vicinity escape. Dr. Blake, in the *Transactions of the Medical Society of California*, mentions a most fatal epidemic at an elevation of 4,000 feet. Many places in England subject to diphtheria are either high or well drained. Scarlet fever also haunts certain places; but these scarlet fever-fields are not at high levels, nor are they those in which diphtheria is especially prevalent. Diphtheria is often connected with defects in the house-drainage, not always due to imperfection in the house-connection with a general sewage system, but to leakage from private cesspools; so that a question of spontaneous origin may arise in this disease, which is hardly admissible with respect to scarlet fever. Season has a different influence on the two diseases; scarlet fever being most prevalent in the autumn, low barometric pressure and greater humidity in the air favouring its diffusion; while diphtheria may arise at any season, and, in my own experience, its most virulent epidemics have occurred in the summer months.

Another difference is found in the fact that scarlet fever is not often associated with other diseases, while diphtheritic affections are not uncommon in the course of other pyrexial disorders. It is recorded in the Report of the Diphtheria Subcommittee of the Epidemiological Society, that in the epidemic of 1861, this disease occurred fifty-seven times alone, thirty-four times in association with scarlatina, nine times with small-pox, seven with measles, six with fever, and three times each with ordinary sore-throat, croup, and catarrh. But in the nature and symptoms of the two diseases are points of unlikeness too great to allow us to rank them as varieties of the same species. Thus, the rash of diphtheria is often absent, is very variable as to the time of its appearance; it occurs seldom at the outset of the malady, and I have seen it as late as the third week of its course. The period at which albuminuria sets in is also different, often appearing in severe cases of diphtheria within the first two or three days, whilst in scarlatina it seldom sets in until degeneration of the kidney is commencing. There is, indeed, an entire absence of definiteness about the duration of the symptoms of diphtheria, which of itself marks it off from the regular sequence of events in scarlet fever. I have known it to last for six weeks, and even two months, without any evident affection of the cervical glands, but with constant formation of exudation on the fauces or on other mucous surfaces.

The mode in which diphtheria localises itself on the mucous membranes, or on the broken surfaces of the skin, would probably be sufficient to separate it from any other disease. I do not know that scarlet fever ever attacks the larynx; but I have seen the diphtheritic membrane appear in different cases upon wounds of the skin, upon blistered surfaces, and upon nearly all the mucous membranes of the body—the lips, cheeks, nose, ears, pharynx, larynx, trachea, and bronchi, and on the anus and vulva; and different epidemics have differed strangely in this respect; in one, the throat would always be the point selected for attack; and in another, the other mucous membranes. It is somewhat remarkable in the latter case that, although the disease was mild and there were no deaths, the subsequent complications were much more frequent and troublesome.

The last point of difference that I shall mention is the fact that, while scarlet fever seldom reappears again in the same individual, diphtheria seems by its first attack to confer no immunity from subsequent seizures; on the contrary, the susceptibility of the throat seems to be rather increased.

Upon taking a survey of all these relations existing between scarlet fever and diphtheria, it is evident that they are distinct diseases, and yet there is some very close and definite connection between them. Wherein the bond consists, it is not easy to point out. From the manner in which the diphtheritic poison seeks out the highest points of the best-drained localities, it has appeared to me most probable that the virus of this disease must be of a more rarefied and subtle nature than the germs that produce scarlet fever.

It is possible that the nature of some other ferments may throw some light upon this subject. I would specially call attention to the discovery by M. Berthelot (*Comptes Rendus*, vol. l, p. 980) of an unorganised glucosic ferment in an infusion of yeast resembling diastase; also to the fact that one fermentation by organised beings frequently prepares the way for another. It may be suggested, that in one of these ways the singular relations existing between scarlatina and diphtheria might be accounted for. I do not venture to affirm that there is a strict analogy between these fermentative actions and the zymosis of scarlatina and diphtheria; but, as there exist in nature ferments requiring the presence of living germs, and others acting independently of them, so there are disease ferments with organic germs reproducing themselves, and others which have no definite term of life, and which are not self-reproductive.

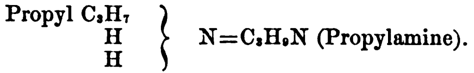
It is probable that, in most cases of fermentation, the living being connected with each kind of this action is of a specific nature, and peculiar to the medium or to the food upon which it lives. In some instances, a ferment either during or at the end of its operation will produce the conditions favourable to the growth of another kind of germ, as seen in the crowd of vibrios appearing at the end of a mycodermic fermentation; so the pyrexial state may produce the condition most congenial to the diphtheritic ferment, whether that may prove to be an organised germ or an unorganised catalytic ferment. As my excuse for offering these suggestions, I will quote, in conclusion, the words of the great English philosopher Robert Boyle. "He that thoroughly understands the nature of ferments and fermentation shall probably be much better able than he that ignores them to give a fair account of several diseases (as well fevers as others) which will perhaps be never thoroughly understood without an insight into the doctrine of fermentation." (*Works*, ed. 1744, vol. i, p. 476.)—*Brit. Med. Journal, Feb.* 6, 1875, *p.* 171.

13.—ON THE TREATMENT OF RHEUMATISM AND GOUT WITH TRIMETHYLAMINE.

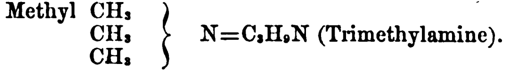
By Dr. W. H. Spencer, A.M., Physician to the Bristol Royal Infirmary.

First, as to the history of trimethylamine, and as to what it is.

Wertheim, in 1850, prepared from narcotine a body having the formula C_3H_9N; he called it *metacetamine*. Anderson, in 1850, prepared from codeine a body having the same formula; he named it *propylamine*. Hoffman, also in 1850, showed (from his own and Würtz's researches) that by the substitution of three molecules of methyl for the three hydrogen atoms of ammonia a body was formed having the formula C_3H_9N; this body was according to Hoffman's nomenclature, *trimethylamine*. Wertheim soon after extracted from herring-brine a body isomeric with his metacetamine; thenceforward he adopted for both bodies the name propylamine. And now, many chemists drew from many different sources, animal and vegetable (cod-liver oil, human urine, putrid calf's-blood, guano, ergotine, chenopodium vulvaria and numerous other plants), a body having the formula C_3H_9N. Always, this body was called propylamine; the substitution-body prepared artificially in the laboratory was, as yet, the only trimethylamine. Then the reconciliation took place, and chemists (following up Würtz's and Hoffman's researches) found that the body got from natural sources was not propylamine at all, but the same in all chemical respects as the artificial compound ammonia called trimethylamine. *Propylamine* is a primary compound ammonia (monamine). *Trimethylamine* is a tertiary compound ammonia (triamine). Thus:



$$\left.\begin{array}{r}\text{Propyl } C_3H_7\\ H\\ H\end{array}\right\} N=C_3H_9N\ \text{(Propylamine).}$$



$$\left.\begin{array}{r}\text{Methyl } CH_3\\ CH_3\\ CH_3\end{array}\right\} N=C_3H_9N\ \text{(Trimethylamine).}$$

Essentially the difference is in the radical; *propyl* is one thing, *methyl* is a different thing altogether. It is methyl that exists in the body extracted from narcotine, codeine, herring-brine, and all the natural sources already named; which exists, that is to say, in our new remedy for rheumatism. I do not know that propylamine has been obtained from natural sources at all. I believe it is as yet only an artificial product, got by treatment of the iodide of propyl with an alcoholic solution of ammonia.

Both the solution and the salt have generally been prescribed on the Continent, in the form of mixture, the vehicle being aqua menthæ piperitæ, and aromatics being used to disguise the unpleasant taste. The dose employed has varied much; it has ranged from 9 to 30 minims for the solution, and has not exceeded 10 minims for the salt. The chloride has been used in the form of pill (made up with marsh-mallow, honey, and tolu), and the solution in the form of capsules. I have, except in two instances, invariably prescribed both trimethylamine and the chloride in the form of mixture, and my formula is this:—

℞. Trimethylamini ♏ iv. vel viij ♏
Syrupi zingiberis ʒ j
Aquæ menthæ piperitæ ℥ j. Misce.
Talis fiat modus, secundâ, quâque horâ sumendus.

And, as supporting the probability of variation in composition, I have at different times found that the same results were obtained with a dose of two minims as with a dose of eight minims. Now, I give always four to eight minims, at first every hour or two hours, increasing the interval as the pains diminish and the case progresses. When all pain is gone, I cease to give the remedy, and substitute, in most cases, quinine. Rarely have I to re-exhibit the trimethylamine, but I do so if pains recur.

Next, for my cases. They are sixty in all; and of these I propose to relate only so many as may be of use for illustration of the effects of the remedy, and for commentary on the effects—whatever they may have been.

Case 1.—G. C., aged 50, a coachman. A healthy man up to forty years of age, and always in good circumstances; had lived freely and drank a good deal of beer. When forty had an attack of gout, the toe only being affected. The next year had another attack; this time the knees were affected. During the next eight years had four attacks, in the last of which (six months ago) several joints were affected and he was in bed for six weeks. He always remained weak for some time after the attacks. No family history of gout or rheumatism; has a tophus in the auricle of the right ear. The present attack dates back three weeks; whilst washing his carriage he thinks he caught cold. The first joint affected was the metacarpo-phalangeal of the right third finger (he says he had received a blow on this finger just before). Subsequently the left knee and hip and the right elbow and shoulder became involved in succession. Admitted on June 20th, 1873. He has pain in all the joints above named, severe and preventing movement, and nearly all the affected joints are swollen. The local heat is considerable, without redness. There is little general pyrexia; the skin is moist; tongue white; pulse 80; has no appetite. The urine is acid, specific gravity 1·020; no albumen. There is no cardiac affection, old or recent. *To take two minims of trimethylamine every four hours.* 21st: There have been frequent remissions in the severity of the pains; otherwise is much the same. 22nd: Has no pain at all when lying still; the pains, he says, ceased suddenly at 10 a.m. (forty hours after the first dose). 23rd: Slept well; has a little pain at times in the shoulder and in the finger-joint of the left hand; can raise himself in bed with little discomfort; the swelling is hardly appreciable; he feels much better, and *very hungry*. 26th: Has no pain at all; can move freely and feels well. *To take the mixture three times a day.* 28th: Is up and able to walk easily. *To take quinine.* July 6th: Some slight pain and swelling have recurred in the finger-joint of the left hand. Has been in the garden daily for four days. 9th: The finger got well very soon, and he was discharged to-day well and strong.

[This I take to have been a case of gout. The man himself expressed surprise at the rapidity of his recovery, as compared with all the previous attacks. Two points in the case deserve notice: in less than three days the appetite returned; the man felt hungry and requested more food: the recovery of strength was rapid and marked. These are very frequent effects of the remedy.]

Case 2.—J. B., aged 49, a brewer's cellarman. Has been working in wet cellars, frequently standing in the wet. About once a month, for some time past, he has had attacks which compel him to keep in bed for a week. These begin with pains in the wrists, thence extending to other joints, and finally involving the whole body; he loses all power of motion, and even has to be fed. In the intervals he is weak, has frequent pain, and is unable to move freely. Admitted as an out-patient April 8th, 1873. He is now reduced to a very crippled state, and is weak and miserable. The left leg, from the knee downwards, is much swollen, livid, and purpuric. From this date to June 24th was treated with quinine and iron, cod-liver oil and iodide of potassium, with improvement only to the general health. June 24th: Has now pain in both legs and the left shoulder, which is very severe at night. The attacks have occurred as before. He walks with great difficulty. *To take two minims of trimethylamine three times a day, and pills of iron and quinine.* Took the medicine for a week, and came up on July 8th, no better. Then he took the medicine *every four hours* for a week; he felt much better the week after, but during the following week had one of his attacks in a modified form. Came up on July 29th. The mixture was repeated, and in a fortnight, August 12th, he was quite free from pain. A fortnight later, August 26th, he was still free from pain, and much stronger. *He was put upon quinine.* In another fortnight, September 9th, he was still free from pain, and had had no attack. Was much improved in health; appetite good. The leg was better, but still somewhat swollen and purpuric. Ceased attendance. I saw this man in September, 1874, twelve months after he ceased attendance. He was then looking well; had been quite well and quite free from anything like rheumatism. The leg was better, but still stiff and brawny.

Case 3.—A man, aged about 45, had been an in-patient from January 28th to July 7th, 1873, for chronic rheumatism, dating from November, 1872. He had been treated in many various ways, with some relief; but had never been quite free from pain. He came under my care, as an out-patient, July 11th, 1873. At this time he suffered severe pain in the shoulders, hips, knees and ankles; was very weak and decrepit, could not stand upright, and walked with great difficulty. *He took two minims of trimethylamine every four hours, and pills of quinine and camphor.* In a week the pains were much better, but he had had some diarrhœa. In a fortnight more he was quite free from pain, and was then put upon *quinine and cod-liver oil.* A month after he was still free from pain, and was altogether a different man; he was able to walk without a stick, and was back at his work.

[These two cases of chronic rheumatism are interesting from the fact that both patients, before taking trimethylamine, had been subjected to prolonged treatment in other ways. The first was under the care of a colleague, and the other under my own care during the whole of this time. Both patients were intelligent and respectable men. From the fact that, being out-patients, the men could attend at their discretion, and were only supplied at each visit with medicine enough to last for a week, little can be said about the effects of the remedy beyond the broad fact that these men were cured of a long-standing ailment, the one within three weeks, and the other within five weeks. It is noticeable also in Case 2, that two minims of trimethylamine taken three times a day failed to produce any good effect.]

Case 4.—A. S., aged 11. Had been ailing for a few days, when he got very hot, and then stood about without a coat in cold and damp night air. Felt very chilly, and shivered the same night, August 11th, 1873. The next morning he had pains all over, especially severe in the fingers and groins. On the 16th, had not much pain, except in the groins, where it was worse than before. On the 18th he was very bad; the groins were very painful, and now also the right ankle was extremely painful and swollen. There was considerable pyrexia; the tongue white, and no appetite. The treatment up to this time had been chiefly by warm baths. *To take two minims of trimethylamine every two hours* (began at 12 noon). 19th: The pains remitted during the day, and by the evening were much less severe; the ankle was less swollen. 20th: Slept well during the night. On awaking at 6 a.m. the boy found he had no pain anywhere, so he got up, dressed, *put on his boots*, and went about his play as usual. He was very hungry at breakfast, was pretty well all day, and walked about a good deal. *Citrate of quinine and iron* was substituted for the trimethylamine at noon. All traces of the attack passed off in a day or two.

[This case occurred in my own house, and is of interest and value because I was able to watch it closely throughout.]

Case 5.—W. M., aged 31. Had been in the infirmary for gonorrhœal rheumatism until August 14th, 1873. Was readmitted on August 28th, with very severe lumbar pain and pain in the left foot; the foot was swollen. *To take four minims of trimethylamine every two hours.* The pain gradualy decreased, until, on Sept. 5th, he had no pain at all when lying still, and felt better in himself. The pains did not leave him entirely, and on Sept. 10th he was put upon *iodide of potassium.* Sept. 15th: Continues much the same; the back is bad again, and one knee is affected. *To take five minims of trimethylamine every two hours.* Sept. 22nd: Is much better; the pain has gone. Was put on *bicarbonate of potash with liquor cinchonæ.* Sept. 27th: He is worse again. The iodide of potassium in ten-grain doses was repeated. Oct. 18th: The iodide has been continued; the man has improved, and is discharged to-day, pretty well.

[I have not found that trimethylamine is able to do any good in such cases as this. Yet it would seem that some temporary relief occurred on the two separate occasions of its exhibition. In another case, a man who, eight months before, had been in the infirmary for syphilis, was admitted under my care for rheumatism. I treated him with trimethylamine on four separate occasions, with some relief to pain each time. A cure was at length effected by iodide of potassium.]—*Practitioner*, *Feb.* 1875, *p.* 90.

14.—ON SATURNINE GOUT.

By Dr. Samuel Wilks, Physician to Guy's Hospital.

One of the most interesting facts in connection with lead-poisoning is the production of gout, and apparently true gout; since the arthritic inflammation is due to the deposit of urate of soda in the joints. I have seen this gouty condition so very often, that I have no hesitation in confirming the statement of Garrod and others, by whom the remarkable connection was first observed; for, in several of my cases, the patients were young, and the ordinary predisposing and exciting causes were not present. I believe the observation is comparatively recent, for the great authority on lead, Tanquerel des Planches, does not refer to it. It is true, that he has a chapter on saturnine arthralgia; but he evidently does not refer to the joints, but to the limbs, as his equivalent expression is "douleurs néuralgiques des membres," referring to nerve-symptoms, which, I may tell you, were known to the Greeks as one of the effects of lead.

It is remarkable that not only is genuine gouty inflammation of the joints caused by lead, but of a necessity all the other usual concomitants of gout. Therefore, it is constantly observed that workers in lead not only have chalky joints, but have granular kidney, thickened blood-vessels, and the other changes constantly met with in gout, and which are almost synonymous with those of Bright's disease. In the present case, the urine was slightly albuminous, and the arteries slightly rigid and tense, suggesting the early condition of the change which I name.

This connection of lead and gout is so remarkable, that we naturally try to discover where it lies. We must first ask ourselves what we mean by gout. We generally mean by it that morbid condition of system which is due to the production of an excess of urate of soda, owing to a malassimilation of food. Now, this may occur under various circumstances from different causes; as, for example, the taking of too much nitrogenous food or wines, which directly favour its production; or, in other cases, from want of exercise, and consequent failure to get rid of the effete material; and, in other cases, to simple atony of the stomach in nervous and weakly subjects. The question, therefore, which we have to ask is, in what way lead-poisoning so affects the digestive and assimilative processes as to favour the production of this salt. This, we believe, is the question to be asked, and not a simple chemical one, because we find attacks of gout caused by disturbances of the nervous system, and relieved by such remedies as quinine, mineral acids, and colchicum; causes and remedies which can only indirectly affect the functions before named, and do not act by simple chemical methods. When we think we can solve difficult questions in pathology and therapeutics by known laws, let us ask ourselves how lead causes gout, and how colchicum cures it.—*British Medical Journal*, *Jan.* 2, 1875, *p.* 10.

15.—THE TREATMENT OF ACUTE RHEUMATISM.

By Dr. Thomas S. Dowse, Medical Superintendent of the Central London Sick Asylum, Highgate.

I believe it usually admitted that the *materies morbi* circulating throughout the entire body in this disease is of an acid character—lactic, if you will; and, although there might be some doubt as to whether this be correct or not, still it is quite certain that we have a condition to deal with in which acidity is the most prominent feature. I am not aware that its causation has been explained in any more definite way than that it is in all probability the product of malassimilation producing faulty tissue-metamorphosis. The vagueness of such a definition as this must at once be admitted. It is quite certain that especial individuals are prone under fixed laws to the generation of this rheumatic factor; that the like individuals are especially subject to a nervous condition known as chorea, and that these alternate in the same person is a matter of daily observation; but the relation which this has to the etiology of acute rheumatism, on the one hand, and chorea on the other, has never to my mind been explained.

For some time, the alkaline treatment so much advocated by the late Dr. Fuller held unbounded sway, and the admirable tables drawn up by Dr. Dickinson in 1869 prove most incontestably that alkalies have the power to prevent endocardial and pericardial inflammation. In this year, Sir William Gull and Dr. Sutton somewhat startled the profession by bringing forward a number of cases successfully treated by mint-water; in other words, by adopting careful regimen, mechanical and physiological rest, and allaying pain by opiates. Under this treatment, the average duration of the acute symptoms was seventeen days. Some years ago, when I was registrar at Charing Cross Hospital, the treatment of this disease occupied my serious attention. Dr. Salter gave three grains of quinine every three hours, whilst Dr. Headland gave alkalies. I then found that the course of the disease was cut short by the quinine, but that the tendency to heart-complication was greater than when it was treated by alkalies. From a careful survey of the various modes adopted in the treatment of acute rheumatism, including vapour-baths, lemon-juice, tincture of iron, aconite, hydrochlorate of trimethylamine, blistering, and others, I am inclined to think that its progress can be cut short by the means which I shall immediately explain to you, and that cardiac inflammations can be avoided. I am right in stating it to be an admitted rule that, if valvular disease of the heart or pericarditis supervene upon an attack of rheumatic fever, it does so within the first week or ten days. This is to a certain extent undoubtedly correct. I am one of the few who believe that inflammation of the endocardium is a constant attendant of the acute rheumatic state, not giving rise in many cases to valvular lesion at the time, but predisposing to subsequent change, which reveals itself under circumstances apparently the least provocative. It is quite true that in acute rheumatism no absolute *bruit* referred to the sounds of the heart can, in the majority of instances, be detected, and at the base the sounds will be clear and natural in rhythm, but at the apex they will be attended by a characteristic turbulence and commingling, which, with the hurried action of the heart and feeling of oppression in the epigastrium, will be indicative of hyperæmia of the mitral valves.

Thus it seems to me that, in the treatment of rheumatic fever, we have, first, to consider the best way to eliminate the acid products of the diseased state; secondly, to relieve pain. Beyond this, the case can be treated as an ordinary one of functional glandular derangement, or febricula; for, when once the sour secretion from the skin is eliminated (no matter how acid the urine might be), the pain subdued, and the temperature influenced, we need have no fear of heart-complication arising. Then comes the question, What are the best means, if there be any, to bring about this condition?

During the past three years, I have been in the habit of packing most of my cases in a wet blanket, and afterwards rolling them up in dry blankets, so as not only to promote profuse sweating, but also to increase the temperature. This mode of procedure, which I conducted in a very indefinite manner, gave such good results, that I thought carefully over the *rationale* of the system, and at once adopted a course of wet packing after the manner and with the success which I will relate. The procedure is simple. The bed is covered with India-rubber sheeting; over this is laid a blanket which has been wrung out of hot water. The patient is then enveloped in the blanket, and covered with six folds of dry blanketing. By this, the temperature is raised and profuse sweating results: the former, if need be, is assisted by the administration of brandy in half-ounce or ounce doses every hour, and the latter by giving freely warm milk and water. If the temperature exceed 102 deg., then the stimulant is unnecessary. My plan is to continue the treatment for three successive days; namely, for six hours the first day, four the second, and two the third. After the first pack, the patient is free, or nearly so, from pain; after the second pack, the pain has completely subsided, and after the third pack the sour smell usually disappears. In addition to the relief from pain and subsidence of acid secretions, the pyrexial state, with its attendant symptoms, will be found to decrease in direct ratio, and likewise the pulse. The secretion of urine will become more plentiful and the urea will diminish in quantity; yet, although the improvement is so marked in reference to pain, sweat, pulse, and temperature, the urine remains acid and loaded with lithates, and the tongue coated, for some days longer. It not unfrequently happens, especially in youngpeople, when the weather is variable, that transitory pains return in one or more joints; but in almost every instance the pain has been subdued, if not by the first, by the second bath. In reference to cardiac inflammation, I believe that this treatment subdues it more rapidly than any other, rendering the valves less likely to undergo organic change.

But now comes a very important practical question. There can be no doubt that the packing process produces considerable constitutional disturbance. Under what circumstances should this treatment be adopted, and under what conditions is it not practicable? Every one who has had much to do with this disease must be conscious of the anxiety which it gives him when the temperature exceeds 105 deg. or 106 deg., and especially when it is associated with the least sign of cerebral disturbance; and, as my treatment consists in elevating the temperature, it will be apparent that some care is necessary. Thus, according to my experience, it should not be adopted—1. If the patient suffer from incompetency of the aortic valves ; 2. If there be much fluid in the pericardium from previous inflammation; 3. If the temperature be over 104 deg.; 4. If the skin be hot, dry, and harsh, without the least tendency to sweating; 5. If there be extreme nervous prostration from habits of drunkenness or other vitiating cause; 6. If the patient be pregnant.

Again: during the time the patient is packed, the following points must be observed:—1. If, after two or three hours, the patient become very restless, with a dry non-perspirable skin, I should advise the treatment to be discontinued; also when the temperature exceeds 105 degs.; 2. If the temperature do not rise, and the patient be sweating freely, give half an ounce, or even an ounce, of brandy every hour in warm milk and water. Thus we have to secure profuse sweating and a mean temperature of 104 deg.; we have to guard against a dry skin and a temperature over 105 deg.

Let us consider this a little more practically. If a healthy child be packed for six hours as directed, whose normal temperature is 99 deg., we find that it will only rise one degree during the whole course of the six hours, and the administration of a stimulant will not cause it to rise any more. It is very different during the pyrexial stage of acute rheumatism, and I have proved most unquestionably that, when the packing alone does not increase the temperature, this is easily brought about by giving brandy in the manner just stated. I have adopted this treatment with excellent results in cases where there has been, in addition to the rheumatic inflammation, a mitral murmur, pericarditis, and pleuropneumonia. In some cases, I give medicine, in others I do not. My rule is this: not to give medicine or solid food until after the third packing, and this means not until the acute symptoms have subsided and the temperature is down to 100 deg. ; then some vegetable tonic, with solution of acetate of ammonia, is to be preferred to large doses of alkali or quinine. If, however, the case have been of long duration before coming under treatment, and if it be the third or fourth attack, with probably cardiac disease, then of course the orthodox measures must be resorted to for such complications. If the temperature should run very high, with tendency to delirium, I believe the best plan is in every instance, whether under the packing treatment or otherwise, to apply ice to the head, expose the body freely to a current of cold air, and sponge it over lightly with a mixture of one part of spirit to two of water, until the temperature falls; then to discontinue this, and to apply a sinapism to the epigastrium. The following case occurred in my practice, from which a lesson might, perhaps, be learned. A young robust woman, aged 19, came under my care with incipient acute rheumatism, but with a dry harsh skin and a temperature of 102 deg. I had her packed in the usual manner at 1.30 p.m.; at 4.30 p.m., there was no action of the skin; temperature, 104; at 6.30 p.m., still no action of the skin; temperature, 106·2 deg.; rapid action of the heart and tendency to delirium. I at once applied ice to the head, bathed the exposed body with spirit and water, and in twenty minutes I was pleased to find the temperature down to 103 deg.; the following morning it was 101 deg. Again: a woman, aged 28, of drunken and dissolute habits, came under my care with the third attack of acute rheumatism; there was considerable prostration and a temperature of 103·2 deg. I thought that I detected a fine murmur obscuring the second sound at the base of the heart. I ordered her to be packed in the usual way; but her temperature continued to increase, until it reached 110 deg., and she died. This is the only case which has terminated unfavorably out of a very large number. Whether the high temperature arose from the treatment, I am unable to say, and, as such cases do occur now and again under any treatment, I must decline to give an opinion.—*British Medical Journal*, *Jan.* 9, 1875, *p.* 39.

16.—ON THE TREATMENT OF RHEUMATIC FEVER BY A NON-NITROGENOUS DIET.

By Dr. JAMES ANDREW.

In the *Lancet* for May 23, 1874, is a report of a paper on some points in the dietetic treatment of disease, read by Dr. Parkes before the Medical Society of Southampton. In it he gives the result of his experiments with a non-nitrogenous diet in dyspepsia and in health and draws the following conclusions from them:—

"A non-nitrogenous and non-saline diet lessens the formation of acid, as the following facts will show.

"The normal amount of free acidity in the urine is usually expressed, as proposed by Julius Vogel, as equal to so much crystallised oxalic acid; the normal daily average amount of free acidity in the urine of healthy men is equal to the acidity of from two to four grammes of crystallised oxalic acid. I kept a healthy man on ordinary meat diet for fourteen days. The mean free acidity was equal to 2·749 grammes of oxalic acid in twenty-four hours; the highest amount on any one day was 3·369, and the lowest 2·122 grammes. I then put him on a diet entirely non-nitrogenous, and very nearly non-saline. On the first day the free acidity of the twenty-four hours' urine sank to 1·847 grammes, and on the second day to 1·255 grammes, or less than one-half the average.

"I kept another man on ordinary diet for twelve days; the mean daily acidity was equal to 3·406 grammes of crystallised oxalic acid. He was then put on a non-nitrogenous diet for four days; the mean daily acidity of these four days was only equal to ·873 gramme of oxalic acid, or one-fourth the normal amount; on the third day it was only ·618 gramme, or one-sixth the normal amount. He then returned to meat diet, and subsequently was placed again for five days on non-nitrogenous and non-saline food. On the first three days the mean acidity was only ·509 gramme in each twenty-four hours; on the fourth day the amount was only ·0368 gramme, and on part of the day the urine was alkaline; on the fifth day the acidity was only ·444 gramme, or one-eighth the normal amount. I notice also, in Dr. Pavy's excellent book on food, that Mr. Mahomed, in some experiments on a non-nitrogenous diet, found his urine became alkaline.

"Now to ensure this diminution of acidity there must be more than a mere farinaceous and milky diet; at least I found a man, who took only oatmeal and milk, had a free acidity equal to 3·022 grammes of oxalic acid on an average of many days. To produce the effect, the diet must be non-nitrogenous, perhaps non-saline. This diet also increases the flow of urine, so that I am sure it must be found useful in gravel and uric acid deposits generally.

"I was curious to know whether, when a man was on this non-nitrogenous diet, he would pass any uric acid: the quantity of urea daily excreted was of course greatly lessened, and so was the uric acid; but even after three or four days of non-nitrogenous diet, I could still always find a little uric acid in the urine. This seemed to me an argument against the origin of urea from uric acid; for why, when all nitrogen was cut off, and consequently the oxygen must have been in relative excess, should not all the uric acid have been converted into urea, if that is its usual origin in the body? It was not so converted, however, but passed out *pari passu* with the urea, as if furnished by special cells. At any rate we may be sure we cannot entirely exclude uric acid by a non-nitrogenous diet, though we can greatly lessen its amount.

"The second effect produced by a non-nitrogenous diet is a great lessening of the power of the heart, which is perceptible twenty-four hours after the commencement of the diet. The heart beats more feebly, the pulse is smaller and softer, and if the sphygmograph is used, the height of the upstroke is only half of what it is in the normal state of the man. This action on the heart is so marked that it should make us watch the effect of a non-nitrogenous diet. The mode in which I gave the non-nitrogenous diet was as follows:—

"Butter was melted in a jug placed in a water bath, and the liquid oil was poured off.

"Arrowroot cakes were made with a portion of this butter, and a little sugar was added. A good cook can thus make very agreeable cakes, which should not be in the least tough. These arrowroot cakes were eaten by my patients with great relish when buttered; they also took arrowroot jelly sweetened."

On reading these statements it occurred to me that the effect produced upon the urine, viz., the great diminution in the amount of free acid and of urea, made it extremely probable that a non-nitrogenous diet might be advantageously employed in the treatment of rheumatic fever; for, as it is scarcely necessary to remind my readers, the urine in this disease contains a large quantity of urea and of uric acid, the index of an excess of nitrogenous matter undergoing more or less perfect oxidation in the system. The alkaline treatment neutralises this excess of acid not only in the urine but in the blood, and prevents its ill effects: the application of blisters, which does somehow cure rheumatism, although its consequences are often troublesome, is attended by a marked lowering of the specific gravity of the urine, which at the same time frequently becomes alkaline. Even in the natural course of the disease, as established by Sir William Gull and Dr. Sutton, this same change in the specific gravity and acidity of the urine takes place at the termination of the acute symptoms. To cut off the supply of nitrogenous matter for a time would seem to fulfil much more perfectly the end sought for by the administration of alkalies, to be free from the inconveniences of the blister treatment, and to assist at any rate the natural process of cure relied on in the expectant treatment.—*St. Bartholomew's Hospital Reports, vol.* x., 1874, *p.* 359.

17.—TREATMENT OF RHEUMATIC FEVER BY CYNARA.

By Dr. E. Copeman, Senior Physician to the Norfolk and Norwich Hospital.

As long ago as March, 1833, I published in the Medical Gazette (vol. xi., p. 844) some cases of rheumatism treated with the common artichoke in the form of tincture and extract. I was at that time the resident medical officer of the Norfolk and Norwich Hospital, and the physicians gave over to me their cases of rheumatism, that I might put fairly to the test the value of the remedy I had introduced to their notice. The result was so encouraging that I have ever since employed the tincture and extract of cynara in my own practice for the cure of rheumatism, and have been perfectly satisfied with the results. My reason for again addressing the profession on the subject has arisen from the fact of my having had recently some cases of rheumatic fever, which have been more speedily relieved and cured by this medicine than by any other treatment that I have witnessed; and my object is to induce others to give it a trial and to report the results in our widely circulating journal. This will be carrying out, as far as it goes, the idea I wished to impress upon those present at our annual meeting at Norwich—that it might do much good if all who believe they have facts in physic to rely upon, would communicate them to others through the Journal, and court replies from such as will put them to the test of their own experience.

I will describe briefly one or two of the cases of rheumatic fever to which I have alluded as of recent occurrence. The hospital porter, twenty-four years of age, tall and not robust, had suffered from several severe attacks of rheumatic fever. The first attack he had was in 1870, when he was laid up for seven weeks. In the following year, he had a slighter atack, and was only confined for about ten days. At the end of the same year (1871), he was appointed to the London police, only doing night duty occasionally. At the commencement of 1872, he was in Guy's Hospital for ten weeks with a severe attack, which affected all his limbs and the pericardium also. On March 29th in the present year, whilst in his office as porter at our hospital, he was suddenly seized with acute rheumatism, affecting most of his joints, and preventing almost entirely all voluntary movements. He had also a good deal of fever, with rapid pulse, and the peculiar sweating belonging to the disease. He was placed in one of the wards under my care ; and, according to my usual plan, I immediately treated him with cynara, and gave it in the following form, viz.: ℞ Potassæ bicarb. ʒ j ; aquæ camph. ad ℥ viij. ; tincturæ cynaræ ℥ j; syrupi papaveris alb. ℥ ss. M. Two tablespoonfuls were ordered to be taken every four hours, with as much of the extract of cynara as would make two moderately sized pills. Lemonade was given him to drink. He very soon got relief; and I find in my notes that on April 24th he had had no pain for a fortnight, and that the swelling left the joints very soon after commencing the treatment. From past experience, the man expected a much more prolonged illness, and was astonished at the speedy relief afforded by the medicine. He has been performing his usual duties ever since his recovery, and up to the present date (November 19th, 1874) he had no return whatever of this disease.

A girl, aged 19, living in the country, was admitted into the hospital on June 20th, 1874, with rheumatic fever. Her lower limbs were more affected than the upper, and she was quite unable to stand, or bear the ankles to be moved; she was attacked only a day or two before, and both her feet were beginning to swell. She had all the usual symptoms of acute rheumatism, and the urine was albuminous—specific gravity, 1025. I gave her the same pills and mixture as before described, with lemonade to quench her thirst; and in four days she had lost all pain. On the 29th, she was able to walk, and was allowed to leave her bed; on July 6th, she was discharged cured.

Three other cases occurred about the same time, and were soon relieved by the same treatment.

No other medicine has in my experience appeared to be so efficacious as cynara in rheumatism, acute or chronic, but I have frequently heard of its having failed in other hands; and I suspect the reason is that it is often perpared from leaves gathered at an improper time, when there is no medicinal virtue in the plant. The leaves should be gathered just before the top of the vegetable is fit for food, and whilst they are full of juice; if left until the top is cut off for cooking purposes and the plant begins to wither, no good will be derived from it, and, if given, it would be condemned as useless and inert.

Now, as rheumatic fever is a disease of frequent occurrence in almost all localities, though in some more than others, there would be no difficulty in accumulating facts, *pro* and *con.*, if only practitioners could be persuaded to give the treatment I have mentioned a full trial. I am perfectly convinced that no harm would arise to the patients from trusting to it for a time; and I feel, moreover, certain that a very large number would be materially benefited by adopting it. I repeat that it is absolutely necessary to pay attention to the time the leaves are gathered, and to be careful in the preparation of the medicine; and it would be perfectly safe to increase the dose of the tincture gradually from one to four drachms should the case prove obstinate. I know little or nothing about the physiological action of the drug; but Mr. Sutton, a chemist in Norwich, takes an interest in the subject, and will endeavour to ascertain, if possible, the active principle contained in it.—*British Medical Journal, Dec.* 19, 1874, *p.* 768.

DISEASES OF THE NERVOUS SYSTEM.

18.—ON VARIOUS THERAPEUTIC USES OF CALABAR BEAN; ESPECIALLY IN TIC.

By Dr. W. Munro, Cupar-Fife; late District Medical Officer, St. Kitts, West Indies.

Having, in 1871, pointed out the probability of Calabar bean being useful in cholera, from the power which Dr. Fraser has shown it to possess of expanding the peripheral blood-vessels, I have since then thought it might be useful in many other diseases, in which, from one cause or other, these blood-vessels are contracted, but was prevented by various circumstances from applying my ideas in practice until October last. Calabar bean had, up to that time, so far as I am aware, only been used in tetanus, although it has recently been used in general paralysis and acute mania (British Medical Journal, January 10th and 17th).

Tic Douloureux.—Believing that in *tic* the blood-vessels of the part affected are in a state of contraction, I have made use of the bean in several cases with exceedingly satisfactory results. Very short notes of the cases are appended. I may say here that Cupar is a rather low-lying place, in which tic of an intermittent form, which disappears on the person leaving the town, even for a time, is not uncommon. Fever and ague in those who have had it abroad is apt to return. There is, in fact, a slight malarious influence evidently present in the atmosphere.

Case 1.—October 16th, Mrs. D. had tic on the left side of the head. I applied one of Streatfeild's ophthalmic squares to the eye. In about five minutes, she expressed herself as decidedly relieved. This was not a very severe case, which may account for only one square being sufficient.

Case 2.—November 6th, Mrs. X. had severe tic, with intense photophobia, brought on by reflex irritation after several days' severe uterine pain, which had now passed away. I used one square, in the right eye. In ten minutes, she was able to open her eyes and converse cheerfully. In half an hour, I used another, relieving the pain entirely, only leaving a "slightly bruised feeling," which was almost entirely removed by another half. The pain did not return, and no more Calabar bean was required. The pupil was never contracted.

Case 3.—Miss J. K. had severe intermittent tic, with anæmia. At present, it was almost remittent. She had very severe pain all over the left side of the head, and some on the right side. The pain was intense over the left eyebrow. The pupils were much dilated. She was first seen on December 10th, at 11.15 a.m., between which time and 4.30 p.m., three squares and a half were used (from half to two at a time) in each eye. At 6.45 p.m., she had no pain. At 8.30 p.m., I found she had had a very slight short pain about 7 p.m. Both pupils were still dilated. December 11th, pain returned at 3 a.m., and continued almost constantly until 1.30 p.m., when I used two drops of a solution of extract of Calabar bean (1 in 40) in the right eye (that being the side most affected). In fifteen minutes, the pain was much relieved. At 3 p.m., I found her asleep, but on awaking she felt slight pain on both sides of the head. I used two drops in the left eye and one in the right. In ten minutes, the pain was quite gone. At 9 p.m., she was sitting up, and felt quite well. From this time until December 26th, when I ceased attending, she could at any time stop the pain at once with the drops, which I found it convenient, however, to make of the strength of 1 in 32 afterwards. I treated her at the same time (from the 13th) with quinine and carbonate of iron, with decided benefit. I used the thermometer frequently in the armpit in this case, but observed no decided change of temperature attributable to the use of Calabar bean.

Case 4.—Miss T. had long standing tic, yielding to no treatment. It was only relieved by leaving Cupar for a time, and came back on her return. The pupils were generally much dilated, especially during an attack. I thought of using croton-chloral-hydrate in this case, but preferred the Calabar bean as being only local in action, as I think local remedies are always to be preferred for local diseases, when there is a choice.—December 31st. When called, I found her suffering from intense pain over the eyebrows, mostly on the left side. I used two drops of a solution of 1 in 30 (partly lost) in the left eye, and one in the right. In about ten minutes, she said the pain was not quite so severe. I then used one drop more in each eye, with the effect of relieving still more, according to the patient's statement, the localised pain; but, on my return half an hour or so afterwards, I found her suffering from severe pain in the left eye, the pupils being contracted. The patient, being very reticent, had not mentioned to me that tic could be set up in the eye by even a drop of water getting into it, and even now said nothing to let me understand that the pain was that of tic (which unfortunately she was too well able to distinguish from other pains). Seeing the rather strong contraction of the pupils, I used at once one-third of an atropine square to counteract the effect of the Calabar bean, thinking the pain was caused by the contraction. The atropine acted only too well, evidently being assisted in its action by the tic, and the pain *immediately became more severe.* The dimness of vision common after the use of atropine remained in this case for three or four days, and frightened her, she being rather hysterical, so that she refused to submit to further treatment.

Thus, in this case, the only one which has not been perfectly satisfactory in its results, although the patient was not really benefited by the use of the Calabar bean, the pain was, in the first place, according to her own statement, removed from its primary seat; and, even although set up in the eye by the cold drops, it was evidently kept in check by the action of the bean, until the latter was counteracted by that of the atropine. In such a case, outward application of the tincture (which I suggested, but the patient would not use it) or the use of strong Calabar bean, or physostigmatin squares would be advisable.

Case 5.—This was a case of obstruction of the nasal duct, complicated by tic, which was relieved in fifteen minutes by a little solution of Calabar bean (1 in 15) applied with a camel's-hair brush. It returned in six hours, but was relieved in ten minutes by the bean. It caused the eye to become more injected than formerly. The tic did not return, and the obstruction of the duct ultimately required operative interference. The patient had been suffering from tic for two days continuously when I first saw her.

Case 6.—J. B., a man, had severe tic on the left side of the head. He was seen on March 16th, at 3 p.m. He had been suffering since early in the morning. This case being four miles from town, I used three squares and a half (they being in my pocket). In about ten minutes, there was almost total relief. In twenty minutes, two squares more relieved him entirely. The pain came on again during the night; but, having sent him a solution (1 in 30), he used a drop, and it relieved him immediately.

Case 7.—On May 4th, I had intensely severe tic over the right eyebrow, caused by want of sleep and wearing a tight hat all day. Having no stronger in the house, I had to use a solution of one grain to the drachm. Of this, two drops relieved me slightly, and two more in half an hour removed the pain entirely.

Case 8.—Mrs. W., on May 16th, had severe pain in the right side of the face, and was relieved in about half an hour by two drops (one first, then another) of a solution of 1 in 30.

Case 9.—July 22nd, 12.30 p.m. Mrs. P. had tic in the left side of the head and face. There had been severe pain since 8 a.m. I used a half-square (one-tenth of a grain of extract in each square). Relief was obtained in ten minutes. At 7.50 p.m., there was still a bruised feeling, "but no sharp pain." I used a half-square. The pain entirely ceased in ten minutes. —July 10th. The patient came back for more squares. This is the second patient who has done so.

Case 10.—Mrs. M. had severe tic in the left side, recurring every evening for a week past.—5.45 p.m. I used a half-square (as above). She was relieved in five minutes. At 6.30 p.m., she was free from pain, "though there was still a bruised feeling." Both these cases were afterwards permanently cured by quinine. In them, as also in myself and others in whom I have used the strong squares experimentally, the pupil always becomes *dilated.* These squares are very hard, and this may account for such an action, as they irritate the eye for about two minutes when used. Squares containing physostigmatin, could they be obtained, would be much better.

Case 11.—J. A. had syphilitic paralysis of the right third nerve, probably from a tumour, with external strabismus, ptosis, dilatation of pupil, and neuralgic pains on the side of the face. I used one square on July 4th. The pain was slightly relieved.—July 5th. I applied one-tenth of a grain of the extract in the eye, causing congestion of the conjunctiva, relieving the pain, and producing contraction of the pupil. In this case, the fact that the pupil became *contracted* is very noteworthy, as the third nerve could not play its ordinary part. Possibly the congested state of the vessels may have acted as a cause of contraction.

In none of these cases did I observe decided contraction of the pupil, except in Cases 4 and 11. In Case 3, the pupil became smaller than usual, though never contracted to any great degree. In no case was vision interfered with by the Calabar bean—except slight temporary confusion in Case 3, lasting about two hours. In the experiment referred to in the first note, vision was temporarily confused (after six squares had been used), but the confusion soon passed away. No general symptoms were ever observed. I am quite hopeful that anyone giving Calabar bean a fair trial will find it an useful and safe immediate remedy for tic, leaving time, in cases requiring such treatment, for the use of quinine and iron, or other medicines calculated to have a permanent effect. For my own use, I intend to obtain, if possible, stronger gelatine squares, that being, in my opinion, the most convenient mode of application, being easily applied and certain in action. The idea is a very ingenious one, and does great credit to the inventor.—*British Medical Journal*, *Oct.* 31, 1874, *p.* 549.

19.—ON THE RELIEF OF TOOTHACHE BY BICARBONATE OF SODA.

By Dr. Dyce Duckworth, Assistant Physician to St. Bartholomew's Hospital.

I once read somewhere, but cannot now refer to the passage, that toothache might be relieved by holding solution of bicarbonate of soda in the mouth.

A very severe case in the person of a boy came before me lately, and an open molar tooth was the source of the trouble. I tried to afford relief by rubbing chloroform outside the check, and by putting some on cotton-wool inside the auditory meatus. These procedures failed. I next placed a plug of cotton similarly saturated into the cavity of the tooth. This also failed to give any relief. I was surprised at this, as I had frequently thus used chloroform with success.

I next saturated a small plug of cotton-wool with pure carbolic acid, and inserted this into the tooth-cavity. No abatement of the pain followed. I again tried chloroform, but in vain.

As a last resource I employed a solution of bicarbonate of soda, and to my astonishment the pain ceased almost suddenly, and complete relief was secured. I suppose I put about half a drachm into an ounce of water.

This solitary case seems worthy of record, as it may lead others to try the method adopted here. The remedy is within easy reach, and is very simple. It is difficult to offer an explanation of the *modus operandi* in the above case.

A mouthful of cold water will sometimes prove sufficient to remove the pain in toothache. I cannot now remember whether I tried this plan before using the solution of soda. Bicarbonate of soda is, however, a decidedly sedative remedy in certain conditions, and in proof of this may be mentioned the relief afforded by it in irritable conditions of the stomach, and in the itching of eczema.

It struck me as noteworthy that a somewhat feeble alkaline solution should produce so decided an effect after the application to the sensitive dentine of a powerful agent like carbolic acid. If the toothache is excited by unhealthy (acid) saliva, or buccal secretion, it becomes intelligible that an alkaline solution should rectify this.

In a future case I shall at once employ a *warm* solution of bicarbonate of soda, and thus I shall look for an unequivocal result. It would also be well to test the reaction of the saliva and of the buccal mucus in cases of toothache, with a view to ascertain their possible influence upon the surfaces of carious teeth.

The pathology of saliva is as yet, so far as I know, an uncultivated field, but I believe, if it be looked for, that this secretion will be more often found to possess an acid reaction than is generally believed or taught; and I also think that useful therapeutical hints may be gathered by the employment, at various intervals, of litmus paper in the mouth in many cases of dyspepsia and chronic disease. —*Practitioner, April*, 1875, *p.* 260.

DISEASES OF THE ORGANS OF CIRCULATION.

20.—PERICARDITIS WITH EFFUSION; ASPIRATION OF PERICARDIUM.

By T. H. Bartleet, Esq., Surgeon to the General Hospital, Birmingham.

[A young man was suffering from pericarditis with considerable effusion. There was a considerably increased area of cardiac dulness and marked failure of pulse, also very rapid breathing.]

Cardiac dulness extended to one inch to the right of the sternum and to the upper border of the first rib above, though here the dulness was not complete. The limit of the dulness on the left side was uncertain, owing to effusion in the chest. On auscultation, the heart-sounds were very feeble and distant; no friction-sound. There was a faint mitral bruit. The character of the heart-sounds was not affected by posture. The impulse of the heart could not be felt, otherwise than as an ill-defined movement of the chest-wall at the region of the apex, spreading over a space the size of a crown-piece. The history of cardiac disorder at a former period suggested the possibility of a pericardial adhesion.

At eight p.m. on Nov. 13th aspiration was performed. A No. 2 aspirator needle, unguarded, was used. This was passed in the intercostal space between the fourth and fifth ribs, two inches to the left of the central line of the sternum. The needle was used as an exhausted needle; and directly the pericardium was penetrated, as shown by fluid freely passing into the aspirator, the point of the needle was pressed up against the chest-wall as closely as possible. The fluid flowed freely to fourteen ounces, and then stopped flowing. It was deeply tinged with blood, and deposited speedily a scanty coagulum, and subsequently a layer of blood débris. The supernatant fluid, still somewhat tinged, had a specific gravity of 1024.

During the latter part of the operation it was noticed by all present that the needle could be felt when held by the finger to be moved with the contraction of the heart. The patient was breathing deeply from pain or excitement, and thus prevented any cardiographic movements of the needle being *seen*. During and for half an hour after the operation the patient complained of severe aching pain. This ceased after a dose of fifteen minims of liq. opii. After the operation the line of dulness had receded to close upon the middle line of the sternum. The subclavian dulness had not disappeared, but was much less marked. Rapid recovery followed.—*Lancet, Dec.* 19, 1874, *p.* 866.

21.—DIGITALIS IN DISEASES OF THE HEART.

By Dr. H. C. Wood, Jun., Philadelphia, U.S.

"Digitalis in man, by its action on the inhibitory apparatus, prolongs the period of diastole, thus giving time to the ventricles to fill up with more blood than usual; and also increases the muscular power of the heart, so that when it contracts a greater volume of blood is thrown with a greater force into the arterial system. Before we begin to apply these principles remember also that the vascular system under the control of the vaso-motor nerves is probably kept in a state of contraction by the employment of digitalis.

"Almost nothing but common sense is needed now to apply these facts to the treatment of heart diseases. If what has been said is true, digitalis ought to be useful when there is a deficiency of heart-power. Remember that it is not a rag that will stop up a leak, and do not fall into the common error of expecting the drug to perform impossibilities. It cannot tighten a leaking valve; it cannot open and smooth down a contracted orifice. In other words, in valvular lesions it can only indirectly remedy the defects; and although you will get the most surprising results from its use, yet in every case of valvular lesion there comes, sooner or later, a stage when digitalis is powerless. It is when the valves are healthy and the cardiac failure is simply due to weakness of the muscular walls, that digitalis exerts its most wonderful powers. Nothing is more marvellous in clinical medicine than the relief you can sometimes rapidly afford in cases of simple dilatation of the heart."

After some illustrative cases, Dr. Wood goes on to describe the conditions characterising the dilated heart. Owing to its want of power, the circulation begins to fail, and all the tissues become in urgent want of more and better blood. The beats of the organ become rapid, irregular, and even more inefficient. Digitalis stays it, and gives it time to fill itself with blood and power to propel this through the system. The tissues are supplied, the lungs become cleared, and dyspnœa abates. Never in these cases of rapid pulse with weak heart must aconite or veratrum be given, for, antagonists as they are to digitalis, they would in such cases act as poisons. In hypertrophy of the heart, however, when the whole frame may be shaken by its powerful impulse, digitalis may bring on a condition of spasm, and the patient may die from syncope due to a contracted heart. It is here that veratrum and aconite will prove of service. Irritable heart, again, induced in soldiers and others subject to excessive muscular strain, and usually having a tendency to dilatation, is greatly benefited by digitalis; but when, as in some instances, there is a tendency to hypertrophy, veratrum is indicated. In valvular disease accompanied by dilatation, digitalis is not so useful as in simple dilatation, but by strengthening the muscle it is of service. The administration of digitalis in valvular disease accompanied by hypertrophy may seem to contradict the views expressed above; but here the point to be decided is whether there is or is not relative hypertrophy—*i. e.*, whether the increase is proportioned to the amount of extra work to be done. If it be not so, then the heart, although hypertrophied, is virtually as if dilated, and the use of digitalis is indicated. This is the criterion that should guide us in its administration. Practically, the minute diagnosis of the exact character of the valvular lesion is, in relation to the use of digitalis, of much less importance than a consideration of the condition of the system. Almost always when there are venous congestions and dropsies the heart is weak; and it is a practical rule, with very few (if any) exceptions, that cardiac general venous congestions and dropsies call for digitalis.

After describing the nature of mitral and aortic valvular disease, Dr. Wood goes on to say—

"In the earlier stages of cardiac disease, digitalis helps in effecting what may be called a cure. It is a mistake to suppose that the existence of valvular disease necessarily dooms a patient to a short life, or to one of suffering, or even of decided invalidism. If the disease commences before the age of nineteen, it is very apt to terminate fatally before thirty; but if it is developed after puberty, the victim may enjoy a comfortable life of many years' duration. Nature cures valvular lesion by compensatory hypertrophy; and the rational aim of treatment is to aid nature in this, and, above all, to prevent the failure of cardiac strength that ends in cardiac dilatation. Digitalis will not only aid in averting dilatation, but will also aid very greatly in the production of hypertrophy."

We have not space for the explanation of the mode in which digitalis effects these purposes, but quote what Dr. Wood says regarding the administration of this drug:—

"Probably the infusion is the best form. If there is much dropsy, it may be given in the pill form, combined with squill, of each one grain three times a day. Of the tincture you can give five, ten, fifteen, or twenty drops every four, three, or two hours. In all cases you increase the dose gradually until some effect is attained; but you must do this very carefully, as digitalis is eliminated very slowly from the system, and sometimes, when it has been taken for a long time, a sudden poisonous effect results. Its effects, indeed, are always slow to show themselves, and they also subside very slowly, so that the medicine should be at once withdrawn temporarily when a decided influence is apparent. . . . . I do not want to impress you with the idea that digitalis is a dangerous drug. It has been given in doses of from a half to one ounce without any dangerous symptoms. The tincture has been given in these doses in the treatment of acute alcoholism; and the old school of therapeutists have been at their wits' ends why it did not kill the patient already suffering from the great nervous exhaustion of delirium tremens. They even suggested that the alcohol in the tincture counteracted the depressing effect of the drug. But what are a few drops of alcohol to a man who is in the habit of taking over a pint a day? And how could such small doses of the stimulant counteract the enormous dose of such a powerful sedative as digitalis has been supposed to be? Digitalis in these cases did not kill the patient, gentlemen, because it is not a cardiac sedative, but is a cardiac stimulant. Do not, therefore, be afraid of digitalis in valvular heart disease. Use it cautiously, but boldly; use it freely, but judiciously: and you will find that it deserves even a better title than that of an 'opiate for the heart.'"—*Medical Times and Gazette, April* 3, 1875, *p.* 372.

DISEASES OF THE ORGANS OF RESPIRATION.

22.—ON THE USE OF DIGITALIS IN THE TREATMENT OF SOME CASES OF BRONCHITIS.

By Dr. James Braithwaite, Assistant-Surgeon to the Hospital for Women and Children, Leeds.

Given a patient past the meridian of life, either very stout, or emaciated from previous bad health, and let him, or more commonly her, have a neglected bronchitis, and we have the following class of symptoms produced: A perspiring skin, a poor and quick pulse, urgent dyspnœa, bluish tinge of lips and skin, and respiration accompanied by loud wheezing sounds. The most successful plan of treating these cases, so common during the present severe winter, is the free administration of digitalis, which may be advantageously combined with the compound spirit of ammonia. The digitalis may be given in doses of ten minims of the tincture every two hours. In less urgent cases, the pills recommended by Dr. Fothergill, in his Hastings prize essay published in this Journal, are very useful, and have the advantage of less easily inducing sickness than the tincture. In these cases, it is the heart which is at fault, the right ventricle being gorged with blood, which it is unable to propel through the lungs. The best test of the truth of this theory is its success, for the pulse will be found to become full and slow, and the breathing relieved, directly the digitalis has had time to act on the heart. Its action is sometimes assisted by the judicious administration of a little alcohol. I prefer common gin. If, however, it be found that these cases of commonly called bronchitis are really dependent, for their non-recovery at least, upon weak hearts, care must be taken as to the administration of stimulants, for they accelerate the action of the heart, and in the end weaken it. In fact, digitalis slackens the speed, and stimulants increase it, so they to some extent contradict each other. I have had some cases lately in which twenty minims of tincture of digitalis were given every two hours for a whole day, and then decreased to ten minims every four or six hours. This medicine will be found to be chiefly valuable when the pulse is weak and rapid. In one old lady, about 80 years of age, the effect was remarkable, and in another, seen to-day, the pulse has fallen to 76, with correponding relief to the other symptoms. In another case, in which the pulse was 130 and very weak, it acted magically, but I am sorry I made no note of the exact rate to which the pulse fell. Good supports of all kinds may at the same time be given. I like stimulants less and less in this form of disease; if you want a horse to go one mile rapidly and well, the spurs may be used, but for a long journey a steady pace is better. Some patients are more susceptible of digitalis than others, therefore the effects must be watched, and the dose increased or diminished as necessary.—*Brit. Med. Jour., April* 10, 1875, *p.* 478.

DISEASES OF THE ORGANS OF DIGESTION.

23.—ON EXPLORATION OF THE ABDOMINAL CAVITY IN EXTREME CASES OF OBSTRUCTION OF THE BOWEL IN WHICH THE SEAT OF OBSTRUCTION IS UNKNOWN.

By T. Pridgin Teale, Esq., M.A., Surgeon to the General Infirmary at Leeds.

The case on which this essay is based is of interest as illustrating the advance which is being made in an important department of surgery—"the surgery of the peritoneum." In a clinical essay (Lancet, May 2nd, 1874), on

"Ovariotomy in Extremis," I spoke of the teachings of ovariotomy, and of the encouragement those teachings held out to a greater freedom in dealing surgically with the peritoneum, in conditions in which the patient has often been abandoned to his fate. These remarks had been anticipated in principle, and almost in words, by Mr. Thomas Smith in his paper "On some Points in the Surgical Treatment of Intra-peritoneal Injuries." (St. Bartholomew's Hospital Reports, vol. ix.)

The idea of opening the peritoneal cavity in order to determine the exact seat and cause of obstruction of the bowel, and as a preliminary step to further operation (in the present instance lumbar colotomy), has, I believe, been rarely carried out in practice, and still more rarely with success. It has, however, received encouragement from the case of *intussusception* recently published by Mr. Hutchinson, in which he rectified the invaginated bowel. If further experience should strengthen the growing surgical opinion in favour of greater boldness in opening the peritoneal cavity, we may look for as great an advance in the management of many obscure, and hitherto hopeless, cases of obstruction of the bowel as has taken place in the treatment of the once deemed hopeless cases of ovarian disease.

The following is the history of the patient, the subject of this paper, who was exhibited in good health and vigour at the meeting of the Leeds and West Riding Medico-Chirurgical Society, Oct. 2nd, 1874.

Joseph W., a butler, aged forty, first consulted me in October, 1873, on account of a very severe pain in the small of the back, from which he had suffered for two or three months. The pain was often distressing when he was moving about, but was most severe at night, frequently depriving him of rest. He also passed blood and mucus from the bowel, and his evacuations at this time were small and narrow. On examination I could not detect anything amiss with the rectum, which was of natural capacity, and free from any ulceration or tumour that could be detected by the finger. He was advised to rest at home from his work, and to use morphia suppositories. Under this treatment, aided by careful regulation of his diet, the evacuations became perfectly natural in appearance, form, and consistency, but the discharge of blood and the pain did not cease. Five weeks later he was seen by Mr. S. Hey and Mr. Oglesby, and a small tumour was felt near the left iliac fossa. He was then ordered to take small doses of Dover's powder, and to make further modifications of diet, the result of which was, that the discharge of blood gradually diminished, and since Christmas last has not reappeared. At Christmas he resumed his work, though suffering at times as much as ever from the pain in the back. From Christmas to June he got on fairly well, easing his pain by suppositories and Dover's powder, and having a *solid, fully-formed evacuation* daily, free from blood and mucus.

In the middle of June the action of the bowels, which up to this date had continued to be perfectly natural, was suddenly arrested; aperients and enemata were of no avail, and the body became intensely tympanitic. At the end of ten days, during which no relief could be obtained, by the advice of his medical attendant, Mr. Atkinson, he was admitted under my care, at the Leeds Infirmary, on July 1st, 1874.

After his admission, he was treated by nutritive enemata and hypodermic injections, with a very small allowance of brandy-and-milk by the stomach.

At the end of four weeks from the commencement of the complete obstruction all hope of spontaneous resolution was abandoned. During the latter three or four days he had suffered excruciating pain, had lost flesh rapidly, and had several times been delirious; and it seemed as if, unrelieved, he could not possibly live more than three or four days. After several anxious consultations, my colleagues and myself came unanimously to the conclusion—(1) that the time had arrived when further delay would not be justifiable, and that an attempt ought to be made to relieve him by operation; (2) that no certain opinion could be formed as to the situation of the stricture; (3) that I should be justified in opening the abdominal cavity in order to search for the seat and the cause of the stricture, and to determine the possibility of relieving the obstruction by right or left lumbar colotomy.

Operation, July, 1874.—The patient being under the influence of chloroform, an incision was made in the middle line below the umbilicus, about five inches in length, which enabled me to introduce the hand between the distended intestines and the tense abdominal wall. The first points made out were the distended cæcum and the junction of the ileum with the colon. I then traced the ascending colon and the transverse colon, which latter, owing to its extreme distension, first descended to the pelvis and then doubled back and ascended in front of the left lumbar region to the left kidney, lying in front of and concealing the descending colon. Finally, below the crest of the ilium the distended bowel was felt to terminate in a hard mass of the size of a walnut, apparently attached to the bowel, and puckering it. It was clear, therefore, that left lumbar colotomy would give the relief desired. Five wire sutures were then introduced into the wound and tightened temporarily as far as was deemed prudent, considering the tense state of the abdomen. The patient having been turned to a prone position, the usual operation of Amussat was performed in the left loin. The opening of the colon was followed by a large escape of flatus and of semi-fluid fæcal matter, which so far reduced the distension of the abdomen as to allow me to tighten up the wire sutures and effectually to close the wound in the front of the abdomen.

His progress after the operation was without a drawback. In a day or two he was able to take food almost ravenously, he rapidly gained flesh, and did not suffer the slightest discomfort or inconvenience from the abdominal wound. He is now (Oct. 3rd) better, stouter, and stronger than he has been for several months, and is anxious to resume his duties as butler. Four-fifths of his evacuations are passed per anum, and he has practically no inconvenience from the lumbar anus, except when his bowels are relaxed by purgatives. He still suffers great pain in the back, which is relieved by hypodermic injections twice a day. On examination of the body, a hard tumour of the size of a billiard-ball can be felt midway between the anterior superior spine of the ilium and the linea alba. For the first day or two large quantities of liquid fæcal matter escaped by the lumbar opening, and about the third day some solid scybalous matter was evacuated per anum, the passage of which was attended with very severe pain. By degrees more and more of the contents of the bowel escaped per anum, until at last not more than one-fifth passed through the lumbar opening.

Jan. 11th, 1875.—He reported himself at the hospital to-day, looking remarkable well, and feeling stronger than he has done for twelve months. He has now resumed his duties as a butler. It is, however, to be feared that the original disease is gaining ground, as but little fæcal matter is evacuated per anum, and he has still much pain and bearing down at the rectum.

Remarks.—1. The question may fairly be asked—Seeing that a tumour could be felt in the neighbourhood of the sigmoid flexure, why was not colotomy performed in the left loin, without submitting the patient to the additional risk of opening the peritoneal cavity in order to search for the stricture? The reasons which influenced me, and with these reasons my colleagues agreed, were these:—(*a*) the absence of any evidence of stricture to be obtained by examination of the rectum, such as a tumour, or the dilated state of the lower bowel, so often found where there is stricture high up in the rectum; (*b*) the absence for many months of the discharge of blood and mucus from the anus; (*c*) the absence of chronic diarrhœa; (*d*) the fact that for many months, and even *up to the very date* of the obstruction, the evacuations had been perfectly natural in *size*, *form*, *and consistence*. Further, the risk incurred in opening the peritoneal cavity for the purpose of search did not seem to be great nor equal to the risk involved in performing lumbar colotomy when in doubt as to the site of the stricture.

2. Ovariotomy has taught us that a peritoneum altered by recent or remote inflammation can bear exposure, handling, and cleansing in a manner truly astonishing. In this case, however, we had a healthy peritoneum. My confidence as to the impunity with which a healthy peritoneal cavity could be opened and explored rested mainly on this—viz., the recollection of the frequent occasions in which, in strangulated hernia, a healthy peritoneal cavity is opened, and several inches and even coils of intestine are

handled and sponged, and are manipulated and returned into the abdominal cavity without the occurrence of any unfavourable consequences. This confidence was strengthened by the belief that one great cause of peritonitis after ovariotomy is the presence of blood which either escapes into the peritoneal cavity after the completion of the operation or has been left behind by the operator.—*Lancet, March* 13, 1875, *p.* 369.

24.—ON ABDOMINAL SECTION FOR INTUSSUSCEPTION.

By Jonathan Hutchinson, Esq., Senior Surgeon to the London Hospital; Surgeon to Moorfields Ophthalmic Hospital, and to the Hospital for Skin Diseases.

[Mr. Hutchinson relates an interesting case in which abdominal section was successfully performed for the relief of intussusception. A portion of the bowel protruded from the anus, and was recognized as the cæcum.]

The child having been taken up into the operation theatre, chloroform was again administered, and I then opened the abdomen in the median line below the umbilicus, and to an extent admitting of the easy introduction of two or three fingers. I now very readily drew out, at the wound, the intussuscepted mass, which was about six inches long. I found that the serous surfaces did not adhere, and that there was no difficulty whatever in drawing the intussuscepted part out of that into which it had passed. Just as the reduction was finished the appendix cœci made its appearance, confirming the opinion which had been formed as to the precise part of the bowel involved. The opposed serous surfaces did not present a single flake of lymph, and they were congested in only a moderate degree.

Having completed the reduction, I put the bowel back into the abdomen, and closed the wound, with harelip pins and interrupted sutures.

The operation had been an extremely simple one, and had not occupied more than two or three minutes.

The after-treatment consisted in the use of milk enemata every three hours, with the occasional addition of five minims of tincture of opium.

No vomiting occurred after the operation.

Nothing but fluid food (milk and beef tea) had been allowed through the greater part of this time, from a fear of producing any return of the intussusception. The child was fitted with an abdominal support when discharged, but the scar was sound and strong, and there was no tendency to bulging.

[Mr. Hutchinson then proceeds to review a number of other cases which are on record—the earliest of which occurred so long ago as 1784, and then sums up with the following conclusions:]

1. That it is by no means very uncommon for intussusception to begin at the ilio-cæcal valve, and to progress to such a length that the invaginated part is within reach from the anal orifice or even extruded.

2. That it is of great importance in all cases of suspected intussusception to examine carefully by the anus.

3. That in almost all cases of intussusception in children, and probably most in adults, the diagnosis may be made certain by handling the invaginated part through the abdominal wall.

4. That the prognosis of cases of intussusception varies much; first in ratio with the age of the patent; and, secondly, with the tightness of the constriction.

5. That in a large proportion of the cases in which children under one year are the patients, death must be expected within from one to six days from the commencement.

6. That in the fatal cases death is usually caused by shock or by collapse from irritation and not by peritonitis.

7. That in many cases it is easy, by estimating the severity of the symptoms (vomiting, constipation, &c.), to form an opinion as to whether the intestine is strangulated or simply irreducible.

8. That in cases of strangulated intussusception, whilst there is great risk of speedy death, there is also some hope that gangrene may be produced and spontaneous cure result.

9. That in cases in which the intussuscepted part is incarcerated and not strangulated, there is very little hope of the occurrence of gangrene, and it is probable that the patient will die, after some weeks or months, worn out by irritation and pain.

10. That the chances of successful treatment, whether by the use of bougies or by the injection of air or water, are exceedingly small, excepting in quite recent cases, and that if the surgeon does not succeed by them promptly it is not likely that he will succeed at all.

11. That the cases best suited for operation are those which have persisted for some considerable time, and in which the intestine is only incarcerated, and that these cases are also precisely those least likely to be relieved by any other method.

12. That in the cases just referred to, after failure by injections, bougies, &c., an operation is to be strongly recommended.

13. That the records of post-mortems justify the belief that, in a considerable portion of the cases referred to, the surgeon will encounter no material difficulty in effecting reduction after opening the abdomen.

14. That the circumstances which might cause difficulty are, first, the tightness of the impaction of the parts; secondly, the existence of adhesions; and thirdly, the presence of gangrene.

15. That in selecting cases suitable for operation the surgeon should be guided by the severity of the symptoms, in his estimate of the tightness of the strangulation, and also as to the probability of gangrene having already set in.

16. That in cases in which the patient's symptoms are very severe, or the stage greatly advanced, it may be wiser to decline the operation and trust to the use of opiates.

17. That the operation is best performed by an incision in the median line below the umbilicus.

18. That in cases of intussusception in young infants (under one year of age) the prognosis is very desperate, scarcely any recovering excepting the few in whom injection treatment is immediately successful, whilst a large majority die very quickly.

19. That the fact just referred to may be held to justify, in the case of young infants, very early resort to the operation.

20. That it is very desirable that all who in the future have the opportunity for post-mortem examination of intussusception cases should give special attention to the question as to whether an operation would have been practicable, and should record their results.—*Medico-Chirurgical Transactions, vol.* 57, 1874, *p.* 31.

DISEASES OF THE URINARY ORGANS.

25.—ON DIABETES.

By Dr Andral, Member of the Institute of France, and of the Academy of Medicine, Paris.

M. Andral, whose investigations early in the present century gave so powerful an impulse to physiological chemistry, which has since made such rapid strides, will, to most of our readers, seem to be springing from the tomb, so close has his retirement been for many years past. All who are aware of the careful and conscientious work he did in his day will rejoice, even thus late, at another contribution from his pen. Finding diabetes to have become almost, so to say, a topic of the day, he has communicated to the Académie des Sciences an analysis of eighty-four cases, of which he has preserved written accounts, discarding all others which he had trusted only to memory.

Of these 84 cases, 2 at the period of observation were between the ages of three and five, 3 between ten and twenty, 12 between twenty and thirty, 20 between thirty and forty, 20 between forty and fifty, 13 between fifty and sixty, 12 between sixty and seventy, 1 at seventy-three, and 1 at seventy-eight. Thus, glucosuria, very rare prior to twenty, becomes less so between twenty and thirty, is at its maximum between forty and fifty, and continues to be often met with between fifty and seventy, after which it becomes quite exceptional; that is, the greatest frequency of the disease coincides with the epoch at which the organic forces are in greatest activity. But the ages thus specified were not those at which the diabetes first made its appearance—which were in 12 before thirty, in 40 between thirty and sixty, and in 8 between sixty and eighty. There were 52 males to 32 females.

Several of these cases exhibited the influence of the nervous system in producing or aggravating the disease. Thus, under some moral emotion the quantity of sugar would become augmented in the course of the twenty-four hours from twenty grammes to ninety-six grammes per litre; and in some very rare cases the first manifestation of diabetes followed closely upon the operation of such cause. One woman became diabetic after having inspired so large a quantity of ether during several months that she was often in a kind of intoxication; and in another the diabetes followed disturbances of the sensibility, which exhibited themselves in the forms of partial anæsthesia, and multiple neuralgias. One man was epileptic and another paraplegic before becoming diabetic. In two cases a traumatic lesion preceded the glucosuria, the lower part of the occiput in one case and the nucha in the other being the seat of injury. In three cases there was paralysis of the upper limbs without any alteration in the sensibility.

M. Andral has been able to trace the diabetes to defective nutrition in but very few cases, and he observes that "during the many years that I have attended persons of all classes of society in and out of hospitals, I have met with a larger number of cases among the well-to-do than among the poor. Now, the food constitutes one of the differences between these two classes, being often insufficient and in great part vegetable in the latter, and in the other proportioned to the wants of the economy, and often exceeding these, and great part animal in its nature. I have also found more than once that persons, before they become diabetic, were remarkable on account of the strength of their constitution, some of them having much *embonpoint*. Whatever, then, may be the intimate disturbance which induces—first in the blood, and consecutively in the urine—an excess of sugar, it would seem, in more than one case at least, that this hyperglycæmia and this glucosuria, so far from representing a diminution of nutritive activity, may manifest an exaggeration of this. This idea, which is Prof. Claude Bernard's, is supported by another remarkable fact—viz., the disappearance of the sugar from the urine in the last stage of the existence of diabetic persons, as I have been able to assure myself more than once."

Other disturbances than that of the nervous system may precede diabetes; and thus, although in most of the 84 cases the diabetes manifested itself in the midst of good health, yet in 3 subjects it had been preceded by dyspepsia, in 8 by phthisis, in 5 by asthma, in 3 by organic disease of the heart, in 2 by nephritic colic, in 3 by typhoid fever, and in one by cholera. When diabetes becomes complicated by another disease, it may temporarily disappear, as was the case with a man as long as he was suffering from febrile angina, and with a woman the subject of severe dysentery. Was the cause here the modification of the nutritive action during fever, or the suspension of alimentation?

As is well known, the urine is of greater density in diabetes than in any other disease. Whenever it contained more than twenty grammes per litre, the areometer has always marked more than 1030, standing in a great number of cases between 1032 and 1038, and often between this last figure and 1042. In fever cases it has been between 1042 and 1045, and once it marked 1047—the maximum observed. As the result of comparative observations, it may be concluded that wherever it is of a higher density than 1036, glucosuria exists. The amount of sugar in the eighty-four cases has varied from 6 to 100 grammes per litre; and as these patients discharged several litres in the twenty-four hours (in one of them 480 grammes of sugar, in another 720, and in a third 800 grammes were so expelled), it is evident that, in such cases as these, it cannot be only feculent alimentary substances that furnish such an amount of glucose. Moreover, successions of analyses have shown that, irrespective of the influence of all treatment, the quantity of sugar may greatly vary at closely approaching epochs, and that it may alternately disappear and return. It is under this last circumstance especially that it comes to pass that glucosuria may persist for a great number of years without serious damage to the health, while in other cases diabetes runs almost the course of an acute disease. M. Andral has known it prove fatal in scarcely five weeks after its first appearance.

The general circulation, except when complications existed, has not been notably disturbed, the pulse generally ranging from 60 to 80, and never having been less than 56. But, on the other hand, the capillary circulation has often suffered, as exhibited in red and swollen gums, injected conjunctivæ, erythematous patches of the skin, and passive congestion of the lungs—a frequent cause of death in diabetes. "Can I venture to attribute all these congestions to the sort of difficulty which the blood, loaded with sugar, may find in traversing the capillaries, or do they depend upon defective action of the vaso-motor nerves? And, after all, are they other than hypotheses, these expressions of too thick or too fluid blood, by which formerly so many morbid conditions were too easily explained without sufficient proof? And if I put the question, it is because it seems to me accessible to the combined researches of clinical medicine, experimental physiology, and chemistry. And if an affirmative conclusion be determined upon, we must arrive at this conclusion, that there is an order of hyperæmias which finds its explanation in the blood itself."

In the diabetic subjects upon whom autopsies have been performed, most marked congestion of the liver and kidney has always been found, which M. Andral regards as a consecutive result of the excessive functional activity of these organs. Two other facts, which have been also observed in most of the cases, have much struck him. One of these was a singular induration of the spleen, its parenchyma being so dried up that not a drop of liquid followed incision and pressure. The other was the appearance of commencing tubercular granulations in the pulmonary parenchyma, their slight development probably indicating that they had been developed subsequently to the glucosuria, under the influence of the debility consequent on this.

The treatment generally followed in these eighty-four cases consisted in the use of alkaline drinks and in alimentary regimen composed chiefly but not exclusively of animal substances, to which were added some herbaceous vegetables and ordinary bread. During this treatment the sugar disappeared not to return again in only five cases. In some others it also disappeared but to return again; while in others it remained as abundant as before, or even increased. In these last cases an exclusively animal regimen, unaccompanied by any feculents whatever, was rigidly enforced, and yet the sugar continued to appear. Moreover, this regimen cannot be continued indefinitely, for after a time the patients become so disgusted with it, that, whether we will or not, we must give it up.

M. Andral terminates his paper with some considerations as to how far his clinical experience corroborates the theory of diabetes founded by M. Claude Bernard on the results of experiments. He is of opinion that this is the case only to a very limited extent.—*Medical Times and Gazette, April* 24, 1875, *p.* 450.

26.—BENZOÏC ACID IN AMMONIACAL CYSTITIS.

By Professor Gosselin and Dr. A. Robin.

In the Medical Times and Gazette of February 7, 1874, page 163, appeared a paper presented to the Académie des Sciences by Prof. Gosselin and Dr. A. Robin on the treatment of ammoniacal urine by benzoic acid. Since then they have published an extended memoir upon the production and effects of ammoniacal urine in the Archives Générales for May and June, in which they go fully into the history of the subject, and detail a great number of experiments which they have performed. In another memoir, in the number of the Archives for November, they enter at full length upon the treatment of the cystitis which they have found to be induced by ammoniacal urine.

"In the case of a solution of continuity of the vesico-urethral mucous membrane, the patient is exposed to all the dangers of a general intoxication. It may determine local complications resulting from the immediate action of the urine on the divided tissues, giving to the urinary infiltration quite a character of special gravity. On the other hand, whether a wound of tissue be superadded or not, this condition may be the cause of well-known effects of a different nature from the preceding. There is first the constant irritation of the mucous membrane of the bladder by this urine, whence comes an abundant secretion of mucus, which favours the decomposition of the urea. This irritation, more or less prolonged, may end in a more or less intense cystitis, which in all cases has a remarkable tendency to become chronic. Another result not less important is that the ammoniacal condition favours the formation of ammoniaco-magnesian phosphatic calculi; for, as Prof. Robin has shown that, as the phosphates play an important part in the economy by reason of their property of combining with ammonia—which they fix and saturate,—so, in the various humours and in the urine, they seize the ammonia as it is formed. Unfortunately, the ammoniaco-magnesian phosphate is insoluble."

The problem is to saturate the carbonate of ammonia of the urine without employing substances which may form insoluble salts, or such as are possessed of poisonous qualities. In this way we may be able to prevent, at least in part, the local and general accidents which are due to the absorption of ammoniacal urine, and to the contact of this with divided tissues. In any case such neutralization would serve as a powerful adjuvant to the treatment ordinarily employed in diseases of the urinary organs. Carbonate of ammonia is a very alkaline salt, being almost a base by reason of the facility with which its carbonic acid is displaced, and our object is to select among the acids such of them as are best qualified to meet the object mentioned above. The authors, after passing in review the objections which exist to the employment of the various other acids which have been resorted to for this purpose, come to the conclusion that benzoic acid, formerly recommended by Alexander Ure, is the only one which meets the contingency. This is rapidly transformed into hippuric acid, and exerts no ill effect upon the economy, persons both in health and ill being able to take from two to six grammes per diem without detriment. Hippuric acid, thus formed, increases the acidity of normal urine, and in ammoniacal urine prevents the formation of phosphatic deposits by combining with the ammonia, which without it would have formed with the phosphate of magnesia contained in the urine an insoluble ammoniaco-magnesian phosphate. The hippurates in general, and especially the hippurate of ammonia, are very soluble. Benzoic acid is very slightly soluble in cold water, which constitutes one of the difficulties of its employment; but it may be given in suspension in mucilaginous or syrupy mixtures. A formula is—Benzoic acid, 1 to 3 parts; neutral glycerine, 4 to 6 parts; and mucilaginous mixture, 150 parts. As a general rule, only one gramme (fifteen grains) per diem should be given at first, this quantity being rapidly increased to three or four grammes. To many patients as much as six grammes may be given, providing this quantity be not persisted in for too long a time, as indicated by dryness and a sense of smarting in the pharynx. The production of acidity or neutralisation of the urine does not take place at once, the extreme limits of time which have been observed being from five to nineteen days, the mean period being from seven to eight days. This effect is announced by the diminution of phosphatic deposits, pus, and blood, and by a modification in the odour of the urine, the fetidity of which is gradually lost.

Four well-marked cases are given, and the authors appropriately reprint an interesting case related thirty years since by Alexander Ure, in his paper "On the Treatment of Phosphatic Deposition," published in the Provincial Medical and Surgical Journal, February 11, 1843, and "*Braithwaite's Retrospect*," vol. vii. The following are the conclusions of Prof. Gosselin and M. Robin's memoir:—

"1. The ammoniacal condition entering in part into the production of the accidents which supervene after operations on the urinary organs, it is highly desirable to prevent or diminish it. 2. Benzoic acid and the balsams which contain it, and probably other vegetable productions (as salicine, cinnamic acid, &c.), conduce to this result. 3. The hippuric acid which is produced acts in several ways—(1.) By forming a hippurate of ammonia which is less poisonous than the carbonate. (2.) By retarding the decomposition of the urine, and the consequent production of the carbonate. (8.) By preventing the formation of insoluble phosphatic deposits, which are a cause of cystitis, and may become the point of departure of calculi. 4. The administration of benzoic acid should be recommended for the subjects of ammoniaco-purulent cystitis, and especially those of them who have to undergo operations on the urir organs."—*Medical Times and Gazette, Nov.* 28, 1874, *p.* 618.

27.—ON A SIMPLE PROCESS FOR ESTIMATING UREA IN URINE.

By W. J. Russell, Ph.D., F.R.S., and Samuel Watson, B.A. Oxon, Radcliffe Travelling Fellow.

With the exception of the yeast process for the estimation of sugar, there has been up to the present time no accurate method adapted for clinical use by which it was possible to make quantitative determinations of the various constituents in the urine. Of the normal contstituents urea is by far the most important; yet Liebig's method, which is that commonly used for its estimation, is so lengthy and elaborate as practically to be useless for clinical purposes.

The method we are about to describe in this paper is based upon a chemical reaction which has been long known, but which has not hitherto been available for general use, on account of the elaborate calculations which had to be made with every experiment. With the present form of apparatus these difficulties have been overcome, and accurate results can be obtained by it in a very few minutes. The apparatus is, moreover, easy to use and inexpensive, and its various parts can, if broken, be replaced separately at a very slight cost. (It is sold by Messrs. Cetti, Brook Street, Holborn, price 8s. 6d.)

Urea, as was first shown by Dr. Davy, is decomposed by hypochlorous or hypobromous acid in the following manner:—

$$NH^4CNO + 3\ ClHO = 3\ HCl + 2\ H^2O + CO^2 + N^2$$

that is to say, it is split up into water, carbonic acid, and nitrogen. If the carbonic acid be now absorbed by passing it through a solution of caustic soda, the gas evolved will be nitrogen alone. Davy proposed to measure this nitrogen, and from it to determine the quantity of urea which had been decomposed according to the formula:

60 parts by weight of urea=28 parts by weight of nitrogen.

The decomposition is not quite so complete in reality as he stated. Sixty parts of urea by weight really produce only about 26 parts by weight of nitrogen; that is to say, there is a loss of about 8 per cent. The importance of this loss of nitrogen we shall refer to later.

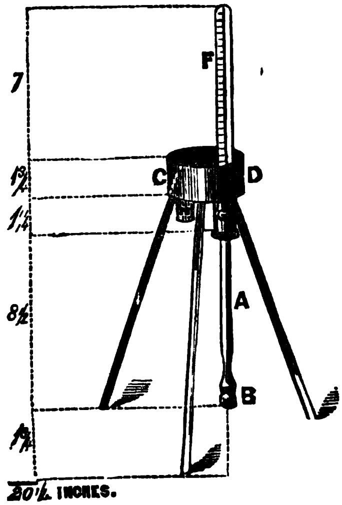
The reagent employed is a solution of hypobromite of soda in considerable excess of caustic soda; and the most convenient strength of solution is found to be that prepared by dissolving 100 grammes (3½ ozs.) of caustic soda in 250 c. c. (9 ozs.) of water, and adding to this, when cold, 25 c. c. (7 drachms) of bromine.

The solution unfortunately decomposes if kept for some little time, and it is safer to make it in small quantities as it is required. This may be easily and quickly done by keeping in stock a solution of caustic soda of the necessary strength, and adding to a portion of this the requisite quantity of bromine at the time the experiment is made.

The apparatus, the form of which is shown in the accompanying sketch, consists essentially of three parts—a tube, A, in which the reaction takes place; a measuring tube, F, to collect the gas produced; and a small pneumatic trough, C D.

The tube A, about 9 inches long, is narrowed two inches from the closed end, and a bulb, B, holding about 12 c. c., blown on it. The upper part of the tube contains about 25 c. c. This is fitted, by means of an india-rubber cork, into the small elliptic tin trough, C D, about three inches long, standing upon three legs. In using the apparatus, a 5 c. c. pipette is filled with the urine, and the liquid is allowed to flow into the bulb of this tube. Water is added, thus washing down the urine which adheres to the sides of the tube, and filling the bulb up to the top of the constriction. A glass rod, with a piece of india-rubber tubing about half an inch long drawn over the end of it, then is introduced, so that the india-rubber plugs up the constriction. The hypobromite solution is then poured into the upper part of the tube until it is full, and the trough is afterwards half-filled with ordinary water.

The graduated tube, F, is filled with water, the thumb placed on the open end, and the tube is inverted in the trough. The glass rod is then pulled out, and the graduated tube slipped over the mouth of the bulb-tube.



The reaction commences immediately, and a torrent of gas rises into the measuring tube. With the strength of hypobromite solution which we suggest, the reaction is complete in the cold in about ten or fifteen minutes; but in order to expedite it, the bulb is slightly warmed. This causes the mixing to take place more rapidly, and the reaction is then complete in five minutes. The reaction will be rapid and complete only when there is considerable excess of the hypobromite present. After the reaction the liquid should still have the characteristic colour of the hypobromite solution.

The simplest means of supporting the measuring tube is to have the bulb-tube corked into a well, G, which projects from the bottom of the trough about one inch downwards. The graduated tube stands over the bulb-tube, is supported by it, and rests upon the cork in the bottom of the well. It is convenient to have at the other end of the trough another well, H, which will form a support for the measuring tube when not in use.

The gas collected is nitrogen saturated with aqueous vapour, and the bulk will obviously be more or less affected by temperature and pressure.

It has hitherto been necessary to make correction by calculations of some intricacy for the variations in the bulk of gas which these produce; but with the present form of apparatus it is found that these corrections may be avoided, and the volume of gas read off at once without calculation. The reason of this is the following:—When urea is decomposed by hypobromous acid, the whole of the nitrogen, as stated above, is not given off, but there is a loss of 8 per cent. at 60° Fahr., which is about the ordinary temperature of wards ; however, the increase in the bulk of gas caused by the temperature, moisture, and pressure, amount exactly to 8 per cent. ; that is to say, the increase due to these causes exactly equals the loss of nitrogen due to the incomplete decomposition. In other words, if we make no correction at all, we get exactly the quantity of gas we ought to have. Hence all calculations are avoided.

The measuring tube has upon it the figures i., ii., iii. These mean 1, 2, 3 grammes of urea in 100 c. c. of urine; *i.e.*, 1, 2, 3 per cent., as it may be called; so that if after experiment the level of the gas stands opposite ii. on the tube, the urine experimented upon contains two per cent. of urea.

Sugar does not interfere with the reaction and albumen only so far that the bubbles of gas take so long to subside. It is advisable therefore to remove the albumen by boiling quickly with a few drops of acetic acid, and to filter. 5 c. c. of the filtrate is then taken and estimated as above.

For further information as to the theory and practical working of the apparatus, reference may be made to the original paper read before the Chemical Society, and published in that Society's Journal for August, 1874.—*Practitioner, Feb.* 1875, *p.* 86.

SURGERY.

AMPUTATIONS, FRACTURES, DISLOCATIONS, AND DISEASES OF BONES, JOINTS, &c.

28.—AMPUTATION THROUGH JOINTS WITHOUT INTERFERING WITH THE PROXIMAL BONE, AND REMARKS ON THE DRESSING OF STUMPS.

By Dr. George H. B. Macleod, F.R.S.E., Surgeon to the Royal Infirmary of Glasgow.

Amputation through joints has long been a recognised method of operation, and the object of the following communication is to advocate a modification of the usual practice, viz., to leave, in every case in which it can be done, the proximal bone with its incrusting cartilage untouched in the stump.

It is doubtless well known that for a long time a very great prejudice existed against amputation at joints, founded chiefly on the recognised danger which attends "wounds" of articulations. The fear was great of exposing cartilage and fibrous tissue to the air, or interfering in any way with these structures. Tetanus, diffuse suppuration, phlebitis, and purulent poisoning were said especially to attack such cases, and thus amputation in the continuity of the limb was performed in preference to that in the contiguity or at a joint. Even in those instances in which the saw was not applied, the ancients appear to have used the actual cautery to destroy the cartilages rather than leave them exposed in the wound. In more recent times again, the opinion has prevailed that proper adhesion would not take place between a surface covered with cartilage and the soft parts laid over it; that the suppuration would be rendered far more profuse by the presence of the cartilage, which it was thought must exfoliate before the stump could heal. Those among us, however, who have had much operative experience, and whose attention has been directed to the fact, must have seen many cases in which the incrusting cartilage of a bone has behaved in no such injurious way, but, on the contrary, has given no trouble whatever.

The writer's attention was first forcibly drawn to the action of healthy cartilage in stumps when serving as surgeon to the General Hospital in camp before Sebastopol, and he has referred to the fact in his work on the surgery of the war. In several cases of amputation through the larger joints he did not touch the cartilage, and the results were such as very strongly to show him not only that the fear which many had expressed regarding the consequences was unfounded, but also with the indubitable advantages attained. In civil practice these observations have been extended and confirmed. Of course the instances in which the practice alluded to can be pursued are not very numerous, *i.e.*, the cases in which it can be fairly carried out bear a comparatively small proportion to those in which it is not applicable, yet, in the public practice of a large city, it is by no means uncommon for injuries (by railway and other wheels and by machinery) so completely to destroy the distal bone as to demand its removal, and yet to leave the end of the proximal bone unhurt. It is perhaps at the knee that we most often have to deal with this state of affairs. The chief difficulty then is to obtain sufficient covering, but by sacrificing no tissue, and not allowing ourselves to be restricted to the usual classical methods of amputating, we frequently succeed almost against hope.

To constitute a good "method" of amputating the chief requirements evidently are—thoroughly to remove what is destroyed or diseased; to retain as much of the body as possible, *i.e.*, to keep as far as we can from the trunk, and so diminish the risk of the operation; to obtain sufficient covering, and that of a kind which will form a good stump (muscle to cover bone, and skin to cover muscle); to fashion our flaps so that they will readily fall into and retain their place; to provide good drainage; and to place the blood-vessels and nerves, and also the cicatrix, out of the way of pressure. If to this we add that, other things being equal, we should as far as possible aid the mechanist in securing a good point of attachment for a false limb, all those conditions will have been enumerated which influence the surgeon in deciding on any special plan of operating. The decided preference manifested in our day for long anterior and short posterior flaps (mainly promoted by Sedillot, Baudans, Lisfranc, Teale, and Spence), is the best evidence of how strongly these views have attracted the attention of the profession. Such methods of amputating allow us to elevate the end of stumps without harm, and, in some cases, this is an important consideration. Now, in amputating through any of the joints we are able in a great degree accurately to fulfil the requirements to which allusion has been made. At the shoulder, Lisfranc's method of cutting a postero-external large flap does so very completely. At the hip the ordinary large anterior flap falls down like a cap over the joint. Cardens and Teales at the knee give perfect results. Syme again reverses the relationship of the long and short flaps at the ankle to attain very obvious and good ends, but here, too, we now restrict very greatly the size of the heel flap, so as to diminish the hollow which it otherwise forms, and, by keeping the ankles free, we are able to secure the most complete drainage. Baudans' amputation, in which the long flap is taken from the front of the instep (and would thus in some respects more perfectly fulfil the conditions laid down), provides such bad tissue for covering the stump that it must be rejected. At the elbow, Dupuytren's plan of securing a long flap from the back of the joint and cutting the tissues short in front, is more in keeping with modern practice than the reverse method which is occasionally adopted. At the wrist, the writer strongly advocates Dubruils' device of using the coverings of the thumb for a flap, as nothing could be more satisfactory than the results it has afforded him. In amputating fingers and toes at their phalangeal joints, the dorsal long flap carries out the system advocated, while the oval plan is so perfect when employed at the higher articulations, as to leave nothing to be desired.

Now, in a considerable proportion of traumatic amputations, and in a larger number of operations for disease at joints, than, theoretically, one would be apt to suppose, the articular end of the proximal bone can be left wholly uninterfered with, as its cartilage is sound and will live and protect the bone. Of course this is not a question which has any bearing on those cases in which amputation can be performed below a joint (though, if the choice lay between operating through the head of the distal bone, and through the joint immediately above, the writer would unhesitatingly remove the limb at the joint, with the reservation of not touching the proximal bone, believing, as he does, that the risk is much less), but the main question he wishes to allude to is that in those cases in which we have the choice of amputating through the joint, or in the bone close *above it*, it is best to choose the former.

By employing such cap-like flaps, as have been referred to above, and in no way interfering with the cartilage or bone, the writer is satisfied that better results *in every way* will be obtained, than by following the almost universal habit of sawing off the articulating surface, or at all events paring off the cartilage. Of course it is only in cases where the incrusting cartilage appears to be altogether sound that such a practice as is here advocated would be thought of.

The objections which can be urged to the proceedings alluded to are—

1st. The risk of the bone below the cartilage being diseased, though the cartilage itself appears sound.

2nd. The difficulty of getting covering for so large a surface as the expanded end of the proximal bone usually is.

3rd. The alleged slowness of cicatrisation, and the difficulty of obtaining adhesion between the flaps and the cartilage.

4th. The supposed increased suppuration; and

5th. The injurious influence which is said to attend the leaving of shreds of synovial membrane within the flaps.

Now, with regard to these so-called objections, the writer would observe, that by careful attention we can always judge whether the bone is sound, and, if it is diseased, we should do better to remove the cartilage alone, and gouge away any affected portion of bone rather than saw off an entire section as is generally done. Of course, if the disease is too extensive for this, then the case is not one to which the plan here described is at all applicable.

As to the coverings, they are too often condemned, simply because they are thickened and apparently changed to the eye, and the operator removes them, having failed to observe how often these structures resume their healthy character whenever the source of irritation has been taken away. In many cases we must take care to sacrifice nothing, and to endeavour to retain as much breadth of flap as possible, and to provide amply for the retraction of such muscles as are known greatly to shorten after they are cut. As regards delayed cicatrisation, failure to adhere, necessary exfoliation of the cartilage, increased suppuration, and the injurious influence of shreds of synovial tissue in the wound, the writer has had ample experience to prove to him their utter groundlessness as objections to the proceeding he has described. In fact, bones covered with sound cartilage cause vastly less irritation, and consequently less suppuration than sawn bones; and it is extremely rare for any portion of the cartilage which has been covered up by a flap to die or be thrown off. If any detrites of synovial membrane, which appears to be diseased, is seen between the flaps, it can easily be removed at the time of the operation.

The advantages which attend amputation in the contiguity and non-interference with the proximal bone, may be thus shortly stated:—

Exarticulation is quicker, easier, requires simpler instruments, and is attended with far less bleeding (from our having to deal, as a rule, with the main arterial trunk), than amputation in the continuity. By not touching the cartilage we can keep further from the trunk, have a longer stump, and not expose the very vascular and, hence, very absorbent end of the long proximal bone.

There are here very great and important benefits which need not be enlarged upon. The risks of septicæmia and ostiomyelitis are reduced to the lowest attainable point as the bone (the chief agent of absorption in stumps) remains sealed. Operations thus performed are attended with much less shock—the integuments preserved are, as a rule, those best fitted for withstanding pressure—there is vastly less risk of injury to the flaps and blood-vessels and nerves by the action of the unsawn bone acting on them, and hence we need not fear protrusion or pain subsequently—we are less apt to be troubled by the retraction of the muscles, as their close adhesion to the bone down to its end is not weakened—the power of sustaining the pressure of apparatus is much earlier acquired, and the point of support is broader and better fitted for pressure than when the bone has been divided. If to this we add that the anastomosis of the blood-vessels in such flaps is very quickly established from the large supply of twigs on the level with joints—that we have no bleeding from the bone to deal with or dread, and that a false limb can with perfect success be fitted so as to retain the joint motion with a stump of the natural length, all the leading advantages of the mode of operating dealt with will have been stated, and it must be allowed that such advantages are neither few nor inconsiderable.

Of course, we cannot amputate through a joint the seat of malignant disease; but it is in secondary amputations for accident that the most marked good is obtained, and it is in such cases that the great dangers of septicæmia and ostiomyelitis are apt to arise.

It may be further added that the redundant size of the articulating head of the bone, which is in some cases left in the stump, in time disappears, and it becomes beautifully rounded and well adapted for the end of the stump.

It is the writer's wish to append a very few remarks on the dressing of stumps, as for years he has clinically tried nearly all the various ways described by our leading surgeons. The best results have always been got from the simplest plans, always supposing care had been taken in the formation of the flaps. A few deeply placed and firmly fixed metallic sutures should be used to fix the flaps and keep them from moving about; "sutures of reserve" may be inserted with advantage at the time of the operation to bring together other portions of the coverings afterwards, when the suppuration has ceased; but, in the first instance, the most complete and perfect drainage is of so much consequence that almost everything should be made subordinate to it. Lay the stump on some soft absorbing material, of which the writer thinks teazed oakum is about the best, and so place it that the discharge will get freely away. No splint should, as a rule, be applied, and if possible, the end of the stump should be slightly depressed during the period of suppuration. A piece of lint wetted in a weak solution of some antiseptic may be laid loosely over the end, but this is not requisite, as where the air in which the patient lies is tolerably pure, stumps do as well uncovered. For three days the first dressing should be left, and afterwards only such changes made as will insure the most perfect cleanliness, *which is essential.* Great gentleness in dressing. No scrubbing, but the free use of a current of water from a kettle or a syringe; the adjustment of the loose sutures as required, and their support, if need be, by strips of adhesive plaster as the wound consolidates and the stump requires moulding, and then, too, careful bandaging to secure a good shape, comprises all the necessary directions the writer's experience has shown him to be required in the great run of amputations.—*Glasgow Medical Journal, October*, 1874, *p.* 446.

29.—ON THE TREATMENT OF FRACTURES.

By W. H. B. Winchester, Esq., Barnes.

If muscular contraction, instead of being an injurious, is a beneficial force, it becomes of paramount importance that it should be utilised but not destroyed, and thus by its innate strength of impact only rendered as active and efficient a means for preservation of position as it has hitherto been for displacement, besides affording at the same time the exact amount of natural stimulus, accurately adjusted to the requirement of each individual case, necessary to excite speedy and perfect reparation.

To illustrate the injurious effect of permanent extension, I need only draw attention to cases of fracture of the patella, where the natural result of muscular contraction is the same as that artificially produced in other cases—viz., the separation of the fractured ends; and it is impossible in permanent extension for it to be otherwise. Here, unfortunately, it is opposed to the approximation of the surfaces of the broken bone, and hence the surgeon's difficulty. There he interposes and opposes the approximation, and hence again his difficulty with the same result—viz., retarded union. Now let us see how the surgeon tries to imitate the natural effect of muscular contraction. Having succeeded, though unintentionally, by means of permanent extension in producing a case of retarded union or ununited fracture, he is anxious to re-excite the dormant natural effort, and this he does by rubbing the fractured ends forcibly together, and at the same time adopting such means as he thinks most likely to preserve position, even to the drilling of holes in the shaft of the bone, near the seat of fracture, and driving iron, ivory, or wooden pegs into these holes, and then ties them as closely together as he can in order that the stimulus of the previous friction should not be lost.

Whereas, had he only utilised that which he has destroyed—viz., the natural stimulus and retentive tendency of muscular contraction—he would have saved himself all the anxiety, and his patient the endurance of prolonged suffering.

In the Lancet for the 17th Oct. is a report of a case of ununited fracture treated in the Middlesex Hospital, which admirably illustrates the injurious tendency of extension, and at the same time of improperly constructed forms of apparatus. No less than three different forms of splints, acting on the same principle, were applied in this case, with the same unsatisfactory result. It need only be contrasted with cases of a similar nature, treated in the same hospital, under the care of Mr. De Morgan in 1855, upon the principle for which I contend, to establish the correctness of that principle in contradistinction to the method of treatment as therein and generally adopted.

Permanent extension, as applied to fractures, and *extension* also after replacement, should be discarded from the vocabulary of the surgeon, and *retention* substituted for it; and this is of easy accomplishment by properly constructed forms of apparatus.

Having on former occasions, in the Lancet and other periodicals, described various forms of my apparatus for carrying out the principle above indicated, the chief of which are now in the Museum of the Royal College of Surgeons, I will, on this occasion, describe a ready but effective means by which the principle can be tested, by any surgeon desirous of doing so, at the cost only of a little trouble at first, but which, unlike the ordinary extension apparatus, when once properly adjusted involves no further trouble.

For fractures of the thigh a Liston's long splint, or a piece of deal of length sufficient to reach from about three inches above the spine of the ilium to a little beyond the sole of the foot, and of about three inches wide, will do. Make longitudinal slits into the holes in the upper end of Liston's splint and do the same in the other. Make a pad of the same width, and a little exceeding in length the splint; three or four folds of linen will do. Sew these together, and at the same time, on one side, the whole of its length, pieces of ordinary bandage sufficiently long to reach round the body and limb, and on the other a piece of linen about three times the width of the splint. This is for the purpose of securing the stuffing afterwards described. Let the patient lie on his back, as if erect, the body not inclining to one side more than the other. Place the pad against the limb, and fasten it by means of the bandage, so that it lies closely throughout its whole length. Against the pad lay the splint, and where it touches the limb secure it by means of extra pieces of bandage. Now adjust the perineal band. This must be done with care, as the length when once fixed must not be altered. Fill in now completely, evenly, yet firmly, the interspaces between the body, limb, and splint, with any material at hand which will not readily shift its position, such as rag, paper, tow, hay, straw, &c. Having done this, secure the ends and sides to the splint by means of drawing-pins or tacks. Remove the splint from the side, and secure the pad immovably to it by tying it through and through. Adjust the fracture, and apply the splint in the ordinary way by bandage, which for security should be tacked to the sides of the splint. By this means the natural form and length of the limb will be preserved; muscular contraction restored in all its energy, not destroyed; and nature thus assisted, not impeded, by art, is enabled to perform her work in the most speedy and perfect manner possible. More than this art cannot achieve.

In fractures of the leg, whether simple, compound, or comminuted, a rough-and-ready yet effective apparatus can be contrived as follows:—Take a piece of board half an inch thick and somewhat wider than the limb; scribe the outline of the sound limb upon it, and, by any ready means at hand, pierce holes at equal distances apart along each side parallel to the line, allowing a little space for a pad (if nothing better is at hand, a bit of red-hot iron will do to make the holes); reverse the board and drive pegs of sufficient height into them, and on the underside fasten at each end a semi-circular piece of wood, thus making it a rocking cradle, in order that the limb may be enabled on lateral movement, to carry the cradle or splint with it.

Here again the natural form is restored. In cases of compound fracture, the pegs on either side can be removed and any portion of the limb exposed for dressing.

Having now indicated a means by which, at the cost of a little trouble only, the principle I have advocated for the last three-and-twenty years can be tested, I leave it in the hands of the profession to decide whether it is worthy of consideration or not. I trust that those who do give it a trial will not fail, in the interest both of the profession and of the art and science of surgery, to report their experience.

I must, not, however, be misunderstood. Undoubtedly there are many cases treated successfully by the ordinary method, but it is in those cases in which the apparatus approximates most nearly to the natural form of the limb that the best results occur. A straight splint is the proper appliance for a straight limb, and a curved splint for a curved limb; that, in fact, the appliance should assume the natural form of the limb, whatever that form may be, whether by previous adjustment to the sound limb, or by careful adjustment to the injured one at the time of application.—*Lancet, Nov.* 28, 1874, *p.* 757.

30.—UNUNITED FRACTURE OF THE FOREARM, WITH DEFICIENCY OF THE ULNA, TREATED SUCCESSFULLY BY EXCISION AND THE WIRE SUTURE.

By Thomas Annandale, Esq., F.R.S.E., Surgeon to the Royal Infirmary, Edinburgh

R. K., aged 29, was admitted into my wards on June 24th, 1873, suffering from an ununited fracture of the bones of the forearm. About six months before his admission, his forearm had been severely injured by machinery. Both bones were fractured, and a large lacerated wound was caused by the accident. He was taken to a provincial hospital, and carefully treated for several months. About three months after the accident, a large piece of bone (a portion of the ulna) gradually loosened, and was removed. Three weeks after this, the wound was healed, but the bones had not united properly.

When the arm was examined, a large cicatrix was noticed over the middle third of the bones of the forearm; it was adherent to the ulna for a short distance, but was otherwise free. Both bones were movable at the junction of their middle and lower thirds, but the radius less so than the ulna. The ulna was not only quite ununited, but was deficient for about one inch at the seat of fracture, the result, no doubt, of the necrosis which had followed the injury. The fractured ends of the ulna were displaced towards, and adherent to, the radius. Pronation and supination could not be performed, and the arm was also weak, and, in consequence, useless.

On June 27th, I performed the following operation, with the hope of making the arm more useful. An incision, about three inches long, was made over the dorsal aspect of the ulna, so as to expose the fractured portion of this bone. It was then found that the fractured ends were rounded off and atrophied, and united to one another and to the radius by some strong fibrous texture. These ends were also displaced inwards, and there was fully an interval of an inch between them owing to the deficiency of the bone.

About a quarter of an inch was now sawn off the ends of the ulna; and, as it was quite evident that these ends could not be brought together, a second incision was made over the dorsal aspect of the radius, and a portion of this bone, including the partially united part, was also sawn off. By thus shortening the radius to a sufficient extent, the ends of the ulna were allowed to meet, the adhesions connecting them to the former bone having been divided. The ends of both bones were then drilled and secured with strong silver wire. The edges of the wounds being brought together with a few carbolised silk sutures, antiseptic muslin was applied in the usual way, and the arm adjusted on a splint. On the 3rd of July, it is noted that the patient has progressed favourably since the operation, and the wound is healing well. On the 8th of July, the wire through the ends of the ulna being a little loose, was twisted more firmly. The patient's progress continues good.

On the 3rd of August, the wounds were quite superficial, and the wire through the ends of the radius being quite loose, was removed. On the 13th of August, the wire was removed from the ulna; and on the 29th, the patient left the hospital, the wounds being almost healed.

Six weeks after this, he returned to show himself, when it was found that the bones were firmly united. The forearm, to a limited extent, could be pronated and supinated; but these and the other movements of the arm were steadily improving, and the limb could already be used in many ways, its strength being greatly improved since the operation.

Remarks.—For the successful treatment of this case, it was necessary to overcome two principal obstacles. These were: (1) the deficiency of the ulna; (2) the displacement inwards of the ends of the ulna, and their adhesion to the radius. In addition, the large cicatrix forming the chief covering of soft parts over the injured bones made operative interference more difficult than if these coverings had been sound. The first of these obstacles was successfully overcome by removing a portion of the radius, so as to allow the ends of both bones to be brought together. The removal of this portion of bone by diminishing the amount of the osseous element of the forearm also permitted the contraction of the wounds in the soft parts to take place satisfactorily. The second obstacle was successfuly combated by dividing the adhesions, drilling the ends of both bones, and securing them with strong wire.

This method of securing the fractured ends would, I believe, prove very valuable in many cases of recent compound fracture of the bones of the forearm. It is a most efficient means of preventing their inward displacement, and therefore assists much in preventing also the union of the radius and ulna to one another, a condition not easy to overcome in this class of injury. The wire which I employ in this and other operations of the kind is silver, of the thickness of that usually employed to secure the corks of soda-water bottles. The instrument used for drilling the bone is a joiner's common small pricker. Having tried more complicated instruments for this purpose, I have now a decided preference for the more simple tool, which I always find to be most efficient.—*British Medical Journal, Jan.* 9, 1875, *p.* 38.

31.—PRACTICAL REMARKS ON FRACTURED FEMUR.

By Dr. Thomas Browne, Surgeon, H.M.S. "Himalaya."

[Muscular contraction is a most important aid in the treatment of some fractures—so much so, that the extension artificially produced by the surgeon in cases of fracture of the femur is sometimes a cause of non-union.]

It seems to me that counter-extension is best obtained by elevating the bed at the foot a height of four or six inches. This tilting is borne without much inconvenience by the patient, and is sufficient for all purposes. Extension is to be made by means of a weight running over a pulley at the foot of the bed, and attached to the leg by means of adhesive plaster. The great secret of applying the extending plaster effectually, so as to avoid slipping, is to cut the plaster of sufficient length to extend almost to the knee, and broad enough to encircle the leg at its upper part about the calf, then gradually narrowing to a breadth of about two inches opposite the ankle. A strip of plaster four feet eight in length and four inches in breadth at the end is usually enough for an adult, but the limb should be measured if a good fit is wanted. The plaster must be smoothly applied along the outer and inner sides of the leg, slitting it at the top if necessary to make it lie neatly. It will be found that a loop of two or three inches long extends beyond the sole of the foot. In this loop must be placed a piece of wood of sufficient length to prevent the malleoli being pressed on. A convenient size for the foot-piece for an adult is about three inches and three-quarters long, by two inches broad; in its centre is a hole to receive the cord to which the weight is applied.

A bandage is then applied from the toes to the knee, passing the bandage beneath the plaster till the ankle is reached, from whence it is carried over the plaster. The weight must not be attached for at least six hours afterwards, in order to allow the plaster to settle and penetrate into the skin. Extension strips applied in this way will remain without any material amount of slipping for a period of six weeks.

The thigh should be fitted with four carefully-padded splints, one on each aspect of the limb, extending the whole length of the thigh as far down as the condyles, except the posterior splint, which should extend two inches below the knee, to aid in steadying the joint. There ought to be an interval of half an inch between the sides of these splints. The extending weight having been applied, these splints are to be secured to the limb by two straps with buckles fastening, for convenience, on the front of the thigh. The extending weight will vary with the requirements of the case; a rough rule is one pound for each year of age up to twenty.

It only now remains to apply the long inner and outer splints. In connection with the application of the long outer splint there is a difficulty not often referred to, and yet very troublesome—viz., the tendency of the splint to become displaced towards the anterior aspect of the limb. This is easily obviated by attaching a piece of wood across the lower end of the splint at right angles to it. The cross-piece need not be more than nine or ten inches long, and for convenience may be of the same breadth at its centre as the long splints (four inches and a half), gradually sloping off towards each end. This effectually prevents any tilting of the splint. This long splint, extending from the axilla to four or five inches beyond the heel, with its cross-piece attached, is to be placed on the outer side of the limb, whilst another splint, also four inches and a half broad, and extending from near the perineum to the ankle, is to be placed on the inner side of the limb. These splints, of course carefully padded, are in their turn secured by a few straps to the leg and thigh; three will usually be sufficient. A broad strap is finally passed round the body, and secures the long splint to the side. A pillow or air-cushion can be placed under the limb, so as to relieve the heel from pressure. These long splints are not employed for the sake of making extension or even for coaptation, but solely to prevent eversion or inversion of the limb. For the purpose of securing the splints in position, straps have the great advantage over bandages that the former are easily loosened or tightened, or even admit of the splints being removed and any little adjustment made, without in the least disturbing the limb.

The illustration will give a clearer idea of this mode of dressing than any mere description. It will be seen that there is no band or other pressure on the perineum, but the extension is made by a weight running over a pulley at the foot of the bed; whilst for counter-extension there is the whole weight of the patient's body, with its inclination towards the head of the bed, given by the bed being raised four or six inches at its lower end.

I have seen this mode successfully used in several instances, and think it is attended with less risk and annoyance than any of the numerous plans in common use. I refrain from quoting statistics, as my cases are not very numerous, and the very best results have been so often claimed for the most opposing modes of treatment that even figures must be looked at with suspicion. The amount of shortening in a case of fractured thigh usually depends more on the locality, nature, and extent of the original displacement, than on the particular mode of treatment adopted. If the ruptured soft tissues have once insinuated themselves between the opposing ends of a fractured femur, I fear the most carefully contrived apparatus will not prevent an amount of shortening, for which the surgeon is most unjustly blamed.—*Lancet*, *Feb.* 13, 1875, *p.* 229.

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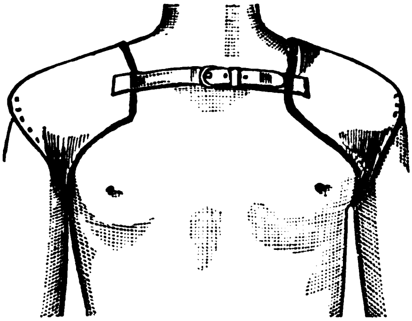
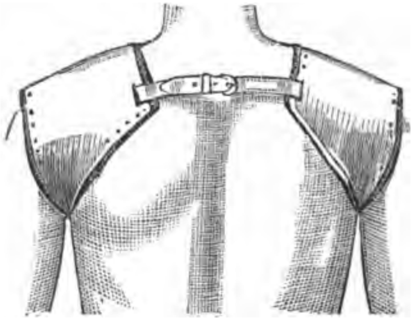
32.—ON THE TREATMENT OF SIMPLE FRACTURE OF THE SHAFT OF THE CLAVICLE.

By Dr. Francis Vacher, Birkenhead.

Having, after repeated trials of Desault's and other apparatus, been disappointed with the results, and found that when my patient was an adult and the fracture between the attachments of the *sterno-cleido-mastoid* and *deltoid*, it was impossible to prevent the inner fragment from over-riding the outer except by bracing back the shoulders, and yet that any purely annular pair of shoulder-clasps, from which to effect the needful retraction, were for the reason given unsuitable, it occurred to me that metal caps which would take a firm hold of each shoulder might accomplish the object sought.

Accordingly, I had made for me, in March, 1872, the simple apparatus here figured. It consists of two sheet-tin shoulder-pieces or caps, soldered at the most dependent parts, where they are strengthened by stout brass wire over which the tin edges are turned. They are carefully shaped to fit the parts they grasp, having been constructed from a gutta-percha pattern I took great pains in preparing, are lined with wash-leather quilted over thick felt, and are connected together by straps and buckles as seen in the cuts, the anterior strap and buckle being merely to keep the caps from tilting.





Each cap measures five inches across the top, and a trifle broader where the straps are attached; the free margin directed inwards is twelve inches, that directed downwards and inwards fourteen inches, and the circumference taken at the outer border sixteen and a half inches. The weight of the pair inclusive of straps, padding, &c., is just twenty-four ounces.*

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* In my zeal to have the shoulder-joints firmly laid hold of, I am conscious I have made my caps needlessly clumsy; thus they project outwards nearly an inch and a half more than is neccessary, and are undesirably full in the front, so that an equally efficient and much lighter apparatus might easily be contrived.

They are exactly accommodated to the size of the patient's shoulders by adding to their lining one or two layers of lint, and the cavities of the axillæ are filled in with pads to any required thickness by winding long strips of lint round the soldered portions of the caps. The pad on the injured side, being always made fuller than on the sound side, though it cannot press unduly on the contents of the axilla, is a very efficient fulcrum over which the head of the humerus is drawn, carrying the scapular and external fragment of the broken bone outwards. Bracing the shoulders back by means of the posterior strap and buckle, and supporting the forearm on the injured side by a handkerchief suspended from the neck, completes the reduction of the fracture, and fixes the acromial fragment of the clavicle in the position attained. When the scapula is not sufficiently bound down by the posterior plate a small pad may be introduced beneath this part of the cap. As regards the anterior strap and buckle, it is perhaps best to fasten it loosely as soon as the caps are imposed, and readjust it after the retraction of the shoulders.

I am prepared to hear that my apparatus is but another addition to the many trifling modifications of approved methods of treatment such as have from time to time sought to attract the attention of the profession since the days when Ledran, David, and Moscati were the recognised authorities on the putting up of clavicular fracture. It is not contended the appliance is more than this. All I claim for it is that if it be skilfully employed it will place and retain the acromial half of a broken collar-bone in a position very closely approaching its position before fracture, without galling the patient's skin, compressing the axillary contents, or interfering with the free action of the chest; and those who have hitherto felt the want of something to do this I am confident will welcome my suggestion.

I have used the instrument in several cases, the subject in each instance being a strong muscular man, and although such force was used in putting up one patient that after two or three days one of the caps broke at the soldering, the pressure had not been complained of as very painful, nor was there physical evidence of it. But, of course, traction, which would be quite intolerable when exercised on a line, may be almost unfelt when made on a broad surface.

If a surgeon were to attempt to reduce a simple fracture of the clavicle by drawing the shoulders back with his index fingers only, he would distress the patient, and yet fail to accomplish his object; reducing the displacement, however, is not hard if he firmly grasp a shoulder in each hand. Thus it is all text-books tell us reduction of this fracture is easy, but keeping it reduced is difficult. In other words, what it takes two hands to draw into position can scarcely be maintained there with two narrow fillets.

As I have found the weight of the slung arm generally sufficient to keep it fairly well at the side, the patient can wear his shirt and a loose coat while under treatment; and as often as required he may be laid on his back, and the axillary pads withdrawn and renewed. The apparatus is, therefore, exceptionally cleanly and comfortable, and, I assume it will be conceded, neither complicated nor likely to be very costly.

In conclusion, I may remark that though the shoulder-caps do not altogether prevent the mobility of the sternal fragment of the clavicle, they, in common with all modifications of the figure-of-8 bandage, restrain it somewhat, and if the patient be directed to keep his face turned a little towards the injured side for the first few days, no deformity need be feared from this cause.—*Liverpool and Manchester Medical and Surgical Reports*, 1875, p. 37.

33.—ON EXCISION OF THE OS CALCIS.

By Edward Lund, Esq., Surgeon to the Manchester Royal Infirmary.

[The entire excision of the os calcis is an operation of but rare occurrence, but it happened to Mr. Lund to have had lately three cases of disease of this bone in which resection has been necessary.]

It was while assisting Mr. Southam in two of his cases that my attention was invited by him to a much more simple form of incision for the extraction of the os calcis than I think has been previously practised by surgeons; and I should wish to give Mr. Southam the credit of having originated the idea that so large a bone as the os calcis could be removed from the foot by a single incision, extending only over its external surface, or that which lies in relation with the outer ankle. But for the more particular details of this operation, and the exact directions which I am anxious to give to those who may wish to adopt this method of performing it, I would hold myself responsible.

The incision which I make is commenced at the back of the foot, just on the internal side of the tendo Achillis, on a line with the middle of that part of the os calcis between which and the tendon the bursa is placed, so that the first portion of the incision being carried boldly down to the bone, this bursa is opened and the tendon set free. The incision is then carried round to the external side of the heel, and so directed that it shall pass along a line extending one-third down from the tip of the external malleolus to the under-surface of the foot, with a slight inferior convexity, then carried on to the spot where we know the os calcis and the cuboid are in contact; and this, speaking roughly, will be at a point midway between the tip of the malleolus and the end of the prolonged extremity of the fifth metatarsal bone. In doing this it is well to remember the position of that little projecting tubercle of bone which, lying on the external surface of the os calcis, gives steadiness to the tendons of the peronei muscles, so that the incision may come just below this point, and thus, if possible, avoid wounding those tendons. The incision being carried down as here indicated, very little more division of structure by a sharp instrument is needful, for it will often occur that the periosteum of the os calcis is so loosely attached to the bone, by reason of previous inflammatory effusion, that it can be very easily detached. Should this, however, not be the case, here and there the tissues must be divided by the scalpel; otherwise I have found at this stage of the operation no instrument more useful than one of those bone-scrapers or periosteum-knives which are used for detaching the hard palate from the bone in operations for fissure in the mouth, and which are sold in the case of instruments employed for that purpose by Mr. Annandale, of Edinburgh. Of course any convenient form of periosteum-knife will serve the purpose. In this way I detach the soft structures first from the under part and back of the os calcis, and, if possible, I even carry the separation as far as its internal surface, so that after a little perseverance and time—and here I may remark that the operation for the removal of the entire os calcis must necessarily be a very tedious one—I am enabled to get the tuberosity of the os calcis to project through the wound by slipping the lower flap well under the bone. The next step in the operation consists in the detachment of the os calcis from the under part of the astragalus, and here it is necessary to proceed upon the upper part of the wound, where, it will be noticed from its position, we have only to work over one-third of the distance, and in doing this I take great care to detach the tendons of the peroneal muscles from the side of the bone without injury, which can be done if a sharp scalpel be not used. Having by a slight movement of the os calcis got a little guide to the joints between it and the astragalus, I find that by employing the "astragalus hook" which I have described in the British Medical Journal, 19th October, 1872, much trouble is saved, for it is strong enough to act as a lever for separating the bones, and then, by bearing in mind the oblique direction of the calcaneo-astragaloid ligament, we can without difficulty cut through these fibres, and pull down the os calcis an appreciable distance from the astragalus. Having done this it only remains to separate the os calcis in front from its junction with the cuboid, and here, at first, there may be difficulty in discovering the position of the joint. In order that I may be able to move the os calcis freely, I take firm hold of it, not with the lion forceps of Sir W. Fergusson, which are often so useful in such operations, but with forceps such as are occasionally employed in amputations for the removal of any additional piece of bone from the stump. These are generally made of such a size that the blades fit very well upon the line of the tuberosity, and with the increased leverage thus obtained there is little difficulty in twisting the bone, and moving it about in such a way as to impart to the finger placed over the front part of the wound a sensation of movement between the os calcis and the cuboid. Here a few touches of the scalpel will divide the dorsal calcaneo-cuboid ligament, and as soon as sufficient space is obtained, the astragalus hook may be here introduced, and partly by leverage, and partly by its cutting action, it will set free the lower calcaneo-cuboid fibres and liberate that portion of the bone. A few portions of fibrous tissue will generally remain lying to the front and the internal side of the os calcis. These have often given me much trouble for their complete division, yet I have found that the astragalus hook has here again served me well. To use it is safe, for it cuts through the tissues partly by laceration, which helps in some degree to restrain the hemorrhage, and it can also be used as a lever with considerable force, and yet each incision made by it is short and limited. It will be seen in this way that the os calcis can be entirely extracted; and provided that in all the incisions which are made during the operation, the instrument (whatever it may be which we employ) is kept close to the bone, no structures of any great importance can be divided, and in none of the three operations which I have performed has the patient complained of any symptoms of nervous pain which might lead me to think that any large branch of the plantar nerves had been injured. With regard to the vessels, the hemorrhage has on no occasion been excessive; in my last operation a branch from the back of the external plantar artery bled very freely, but the flow was easily stopped by torsion. No doubt it was one of those running backwards as a calcanean branch. As soon as the os calcis has been thus got out it becomes our duty to ascertain, either by the finger, or by ocular examination, what may be the condition of the under surface of the astragalus and of the posterior surface of the cuboid. Here, if the cartilages are roughened or destroyed, or if the bone should appear to be softened (as occurred in one of the three cases I have mentioned) it will be right to gouge away, or by some other method remove, all the softened bone we can get hold of. And supposing the diagnosis to be correct, as far as the movements of the ankle are concerned, and the condition of the internal border of the foot, it may be assumed that no other bones will require to be interfered with.

As regards the after-treatment of these cases, I must here repeat what I have so often had occasion to state in previous papers in these Reports, that each case has been conducted as strictly as possible on the antiseptic system. But in reference to this plan there are a few points upon which I deem it well to offer some observations. In the first place, I have observed in this operation especially, and in most operations upon the foot, that the antiseptic system seems to be here less successful as far as entire avoidance of putrefaction is concerned than almost any other part of the body. Why this should be so is rather difficult to say; but I believe it is partly due to the fact that serum and sero-pus when secreted at this distant portion of the body, far away from the centres of the circulation and the nervous system, have in some way less resisting vital power, and are disposed to undergo more rapid decomposition: or else it may be that, in each of these three cases, there had been for a lengthened period before the operation, old diseased bone and old sinuses in the soft tissues in which fœtor had remained for several days notwithstanding my adoption of Prof. Lister's plan of injecting these sinuses freely with a strong solution (forty grains to the ounce) of chloride of zinc immediately before beginning to operate, so as if possible to destroy absolutely all present putrefaction, and start, as it were, afresh upon healthy tissue. The only means by which I think it might be prevented in any future case would be, first of all, to take care as soon as the bone is removed, to bring the edges of the incision somewhat in contact, drawing up the depressed flap from the sole of the foot, and making the cavity from which the bone has been removed as complete as possible; then to fill the cavity with a strong watery solution of carbolic acid, allowing it to remain there for a few minutes, and then repeating this process for two or three times in succession. This is an excellent method of cleansing recent wounds of a deep figure, since by reason of the wound being filled with the lotion, there is the best possible chance of the surrounding tissue becoming thoroughly saturated with it. The other method, which I have already tried in similarly deep wounds with much benefit, though not with complete success, and which is certainly meritorious, is to stuff the wound with strips of cere-cloth or antiseptic gauze dipped in a solution of glycerine and carbolic acid (one part in ten), so as to supply useful pressure that shall arrest the oozing from the smaller vessels, and also act as a good receptacle and absorbing medium in which the blood can soak, and be protected from putrefactive change. In fact, it is now my constant practice in all operations conducted upon the antiseptic principle, to cover the wound immediately after the operation, with six or eight folds of cere-cloth steeped in this carbolic glycerine. I find that the blood which oozes from such wounds falls into the cere-cloth so prepared, and mingling quickly with the glycerine forms an impervious covering to the wound, from which, when first dressed, it can be easily removed. As to the necessity for using the india-rubber drain tube in these cases, if I have employed strips of cere-cloth and glycerine to project beyond the centre of the wound, and to be removed on the second day after the operation, I find they leave sufficient outlet for all future secretions, providing the patient can be persuaded to keep the foot and leg resting on the bed entirely on the external side, in which case the drain will be perfect, and there will be no serious accumulation within the cavity. I generally use about four or five sutures at the time of the operation, introducing them from each angle of the wound nearly up to the centre, and leaving a portion in the middle unclosed, through which, as I have said, the strips of cere-cloth are to be drawn. As the cure advances to completion the surgeon will often notice that the lower edge of the incision has a great tendency to become inverted and drawn in beneath the upper edge. This, in my second case—that of the woman who made so good a recovery, gave me some anxiety, for I thought it would spoil the ultimate result by making the heel smaller and flatter. But I found that gradually this inversion of the edge subsided, and at last without any special interference it became placed opposite the other portion. In none of the three cases have I yet had any complications in the way of abscesses at a distance from the wound, or inflammation along the line of the tendons, and I attribute this entirely to the careful employment of antiseptic measures.—*Liverpool and Manchester Medical and Surgical Reports*, 1875, *p.* 174.

34.—ON "THE LEAST SACRIFICE OF PARTS" AS A LEADING PRINCIPLE OF SURGICAL PRACTICE.

By Thomas Bryant, Esq., F.R.S., Surgeon to Guy's Hospital.

[In the following paper the value of the principle is illustrated by the surgery of the joints.]

I feel more convinced year by year that disorganised joints are more amenable to direct local surgical treatment than is generally supposed, and that free incisions into joints and the removal of necrosed bone from joints are both excellent and successful operations. Both these measures are far less severe than resection in the bulk of cases, and far less serious than amputation; and in a number of instances they are also most successful. To say that these minor measures in all cases are likely to supersede the more severe would clearly be wrong; although I feel convinced that I am not saying more than what is true when I express my belief that a large number of joints would be saved and useful limbs retained were the practice I am now about to illustrate more freely followed. I will now quote a few cases of suppuration into joints treated by incision to illustrate my point.

Case 11. *Pulpy disease of ankle-joint; recovery with good movement after free incision into joint.*—Tom W., aged four, came under my care at Guy's

Hospital on Jan. 30th, 1865, with a disease of the ankle-joint. It was on the right side, and had existed for seven months, having come on after an injury, with pain and swelling. When seen, the joint was clearly much enlarged, the parts around the malleoli, &c., being doughy and thickened. There was pain in the part and daily flushing with heat, especially at night. Fomentations were ordered, with tonics, and by Feb. 20th all heat had disappeared, and all pain and indications of inflammation. The joint was consequently strapped up. The child was then, contrary to orders, allowed to use his limb, and as a consequence a relapse took place. The symptoms became as bad as—indeed, worse than—ever, and suppuration followed, an abscess opening on the outer side of the joint on May 15th. On May 19 another formed about the inner malleolus, and it was clear that the joint was thoroughly opened. A free incision was made into the joint about the inner malleolus, and its contents allowed to escape without hindrance. Water dressing was applied. From this time everything went on favourably. By June 10th the abscess and the incision over the external part of the joint had healed, and all pain had ceased. By September things looked as if they were about to consolidate. On Oct. 5th there was another relapse, and another abscess formed, and severe joint symptoms with constitutional disturbance made their appearance; indeed, it appeared as if an abscess had burst into the joint from the breaking down of some of the pulpy disease in the synovial membrane. The symptoms, however, gradually disappeared, and by Nov. 27th all their severity had gone. From this date everything went on favourably, suppuration ceased, and all thickening of the synovial membrane gradually disappeared. By Feb. 19th, 1866, all the abscesses had healed and the sinuses were closed, and by April the joint reassumed its natural aspect, all thickening of the soft parts having subsided. Strapping was again employed to hasten the absorption of the inflammatory products, and by April 9th the case was reported as well, with, what was hardly to be expected, a movable joint. By December, 1866, the joint was quite sound, perfect movement existing, the remains of the cicatrices and some weakness of the joint alone remaining to testify to the severity and nature of the disease. On December 7th, 1868, this boy called on me, and the joint was still sound and useful, no traces of disease beyond cicatrices remaining. The astragalus moved as smoothly as possible between the malleoli. He is still well.

Case 12. *Pulpy disease of ankle-joint, treated by free incisions; suppuration and recovery.*—William R., aged nine, was brought to me at Guy's Hospital on July 4th, 1864, with a disease of his right ankle of two years' duration. It had appeared after a blow, with pain and swelling, and at uncertain intervals these symptoms had continued ever since. When he came under observation the synovial membrane projected round the malleoli and was much thickened, and appeared in parts to be breaking down; any movement of the foot caused pain, and the astragalus did not move smoothly in its socket. A splint was applied and tonics given. For a time the symptoms improved with the child's health, and it was hoped that suppuration would not take place. In March of the following year, however, two abscesses formed, one on each side of the joint, and it was clear by the passage of a probe that the joint was opened. A free incision was then made on each side, laying the joint open freely, and a splint was kept on. In six months the wound had healed, and the parts appeared to have become consolidated. In another three some movement in the joint appeared. In July, 1866, when last seen, the boy could walk well without pain. The movements of the joint were complete. The boy, however, required some extra support for his ankle, but had a good foot.

Case 13. *Pulpy disease of the left ankle-joint; suppuration; recovery with a movable joint.*—Cornelius M., aged three years, was brought to me at Guy's Hospital on Dec. 14th, 1865, for disease of his left ankle. It had come on after a fall, received some months previously, with pain and swelling, the joint being at times hot and painful. When first seen by me the articulation was clearly swollen from inflammatory infiltration of the synovial membrane. The whole part had a soft and pulpy feel and the margins of bone were all covered in. There was no bulging of the synovial membrane from effusion, and the articulation moved smoothly. Fomentations with strips of wet rag were ordered to be kept on the joint, and the horizontal position was maintained; tonics were also given. By the 30th of January the symptoms had improved; but on February 26th they had again become severe, suppuration threatening. On March 12th an abscess was opened by a free incision in front of the inner malleolus, which was clearly connected with the joint; consequently a splint was applied. By the 25th of June all swelling had nearly subsided, and all heat had gone. Pressure with strapping was applied; and on Sept. 3rd (six months after the incision) the child was declared to be cured, with a good and movable joint.

Case 14. *Pulpy disease of the synovial membrane of the ankle-joint; free incisions; recovery with a good joint.*—Alfred T., aged five years and a half, came under my care at Guy's on Jan. 1st, 1866, for disease of the right ankle-joint of three years' standing. It had appeared after a fall, and had commenced with pain and swelling. When seen, the whole ankle was much swollen, soft, and pulpy to the touch. It was hot and painful, although some movement was allowed. Fomentations were ordered, and steel wine given with good food. The boy was directed to be kept in a bed. On Jan. 29th an abscess appeared on the inner side, which was opened by a free incision, the pus clearly coming from the joint, for it could be pressed out. Water dressing was applied. The case went on satisfactorily after this for a time, but by June 14th a second abscess appeared on the outside from the breaking up of the inflammatory effusion. This was treated also by a free incision, and water dressing applied. At this time the inner wound had quite healed. In three months the outer incision had also cicatrised, and the swelling about the joint had disappeared. Some movement of the articulation also existed. In August, 1868, nearly two years after this date, the child was brought to me, when the movements of the ankle-joint were smooth and perfect, the only marks of the old disease being the cicatrices and the weakness of the joint.

Case 15. *Synovitis and disorganisation of the ankle-joint, treated by free incision; recovery with movement.*—Eliza M., aged two years, was brought to me at Guy's on Feb. 25th, 1864, for disease of the right ankle. It had existed for six months, and had commenced with pain and swelling. When seen the joint was clearly much diseased, although the cartilages were apparently perfect. There was great thickening of the synovial membrane all round the malleoli and the joint, and the parts were hot. Fomentations were ordered with tonics. On March 1st all the symptoms were worse, and suppuration of the joint was threatening. On March 31st the articulation was laid open on its inner side. The whole joint having apparently broken down, a splint was applied. Much relief followed the laying open of the joint, and from that time things began to mend. On May 10th there was a little discharge, and by July the wounds had healed. The splint had been kept on during the period. By July 30th the splint was removed, and on Sept. 10th some movement in the joint was visible. In December the movements were much more perfect, and on April 10th, 1865, when the mother again brought the child, I was surprised to find that the foot moved freely and smoothly between the malleoli and without pain. The joint was weak, and required some support, but it was sound.

Case 16. *Disease of the knee-joint, ending in suppuration, treated by free incision; recovery with movable joint.*—William S., aged thirteen, came under my care in February, 1865, for severe disease of the right knee-joint. It had existed for three years, and had appeared with pain of a dull aching character in the part for at least six months before any visible enlargement of the joint had appeared. The swelling gradually increased after that time, and the pain continued. He had been under care for some months at a metropolitan hospital. When I saw the boy the knee was much enlarged from a thickening of the synovial membrane over expanded epiphyses. There was increased heat in the joint, and pain on pressure. There was little movement in the articulation, but what existed was smooth. An abscess was clearly forming over the inner condyle of the femur. A splint was applied to fix the joint, fomentations ordered to the abscess, and tonics given. On March 1st the abscess was opened freely, several ounces of unhealthy pus and synovial fluid making their escape. The wound healed kindly, and the swelling of the soft parts over the bone gradually subsided, and on December 15th it was noticed that all evidence of disease of the synovial membrane had disappeared. The splint was, however, kept on, as it was thought unlikely that any other result than a stiff joint could possibly result. On Sept. 3rd, 1866, the splint was removed, and, to the satisfaction of all, the joint was found to have recovered, and to be partially movable. By December 17th the mobility of the joint had much increased, and by January 3rd, 1867, he was pronounced perfectly cured. He was seen again on March 24th, 1868, with the parts quite well, the expanded epiphyses having greatly contracted. On May 2nd, he hurt the joint by a blow, and some slight indications of mischief reappeared, but these subsided in a few days under rest and fomentations, and in three weeks he was again well. In August, 1868, the joint was still sound.

Case 17. *Disorganisation of elbow-joint, after an injury, treated by free incisions; recovery with movement.*—Walter L., aged nine, came under my care at Guy's Hospital, on May 18th, 1867, for great enlargement of his right elbow-joint, following an injury received three months previously. Swelling, with constitutional symptoms of a severe nature, followed the accident, and since then the enlargement has been gradually increasing. When I saw the boy, the elbow-joint formed one large abscess. His appearance was one indicative of suffering. He refused to come into the hospital, Two free incisions were consequently made into the joint, one on either side, and an anterior angular splint applied. Pus freely escaped, and free crepitation was felt on moving the joint. Tonics were prescribed, with good living, the boy being in tolerably comfortable circumstances. In one week the condition of the part had much improved, the swelling had subsided, and the sinuses still discharged. He then consented to be admitted into Guy's. All the symptoms, however, rapidly improved, the swelling gradually disappeared, and the wounds healed. By October 10th, there was only one sinus open on the inner side, and all pain and swelling had vanished. On examination there was found to be some movement in the joint, and three months subsequently this had much increased.

Case 18. *Disease of shoulder-joint; suppuration; treatment by free incisions; recovery with a movable joint.*—Henry F., aged sixteen months, was brought to me at Guy's Hospital on Oct. 12th, 1863, for acute suppuration of the right shoulder-joint of five weeks' standing. It had appeared without any known cause, with swelling, severe local pain, and constitutional disturbance. Suppuration made its appearance the day before he came under my notice, and a large abscess was freely opened in front of the joint below the insertion of the pectoral muscle. A probe readily passed through the wound into the joint. The joint was much thickened, and any attempt to move it caused pain. The child's face clearly indicated the severity of the symptoms. Fomentations were ordered, with tonic medicine; and by Nov. 2nd, or in three weeks, the abscess had almost ceased to discharge. By Nov. 9th the wound had closed, and the shoulder was clearly becoming much smaller. On Nov. 16th some movement in the joint was detected, and in six months a perfect recovery was noted. The movement was good, although some amount of crepitation existed.

Case 19. *Enormous abscess involving the shoulder-joint; free incision; recovery with movable articulation.*—Eliza W., aged five, was brought to me at Guy's Hospital on Dec. 18th, 1862, for an enormous abscess completely surrounding the left shoulder-joint. It had been coming on for one month after an injury, and had been attended with severe constitutional disturbance. A free incision was made into the abscess in front of the joint, and a quantity of pus let out; immediate and permanent relief followed. For three months the sinus discharged pus, and the joint appeared to be diseased, for any movement of the articulation caused pain, and was attended with crepitation as of bare bone. In another three months, however, all these symptoms had disappeared, and the child appeared before me with a good arm and a movable joint.

In this case the suppuration clearly came from beneath the deltoid muscle, and was apparently within the joint. The result of the case, however, throws some doubt upon this point, for I never saw so complete a recovery of a shoulder-joint articulation after suppuration as existed in this instance.

The nine cases I have just quoted were all examples of suppuration of a joint from synovial disease. In all incisions were freely made as soon as good evidence existed of suppuration, and in all a good result followed, the disease not only being arrested in every case, but a movable joint being saved to the patient.

The disease, however, in each occurred in children; and it is in such subjects that we meet with the most perfect illustrations of the cure of disease by natural processes. Nevertheless they serve well to illustrate the practice I am here inculcating.

In the next series of cases the same treatment was applied, although with a different result, anchylosis of the joint following in all.

Case 20. *Disease of the hip-joint; suppuration and anchylosis; treatment by free incision.*—Dennis M., aged four, was brought to me at Guy's Hospital on March 19th, 1866, for limping with his right leg. It had been observed for three weeks, and had come on without any history of a fall or injury. The child had complained also of pain in the part. On examination the pelvis was tilted to the left side, giving the appearance of elongation to the affected limb of about an inch. There was no enlargement or thickening about the joint, no increase of heat or pain on gentle manipulation. The glands in the groin were healthy. Firm pressure, however, upon the trochanter gave pain, and any attempt to move the limb excited spasm of the muscles. The parents were directed to keep the child off its legs, to bathe the part with warm water, and to give tonics. By the 9th of April the symptoms had improved; there was less pain and less spasm of the muscles. By the 16th they were still better. The child then disappeared from view, the parents thinking he would soon be well. He soon began to use the limb. On Oct. 15th he reappeared, with evident thickening about the joint, particularly about the neck of the bone. It was more painful on pressure. The symptoms had been worse for three weeks. On Dec. 3rd a large abscess showed itself behind the trochanter, which was freely opened, the finger passing through the abscess down to the joint. A splint was applied. On Jan. 6th the abscess was dicharging, but the child seemed well in his general health. By the 3rd of May the sinus had closed, and the joint was clearly becoming anchylosed. By the 20th of October it was firmly fixed. On Dec. 10th my report states that the joint was quite stiff and immovable, and free from all pain. The child subsequently went about freely with a stiff joint.

Case 21. *Suppuration of the knee-joint after miscarriage; free incisions into the joint; recovery with a stiff limb.*—Eliza K., aged thirty-five, a married woman, came under my care on October 7th, 1864, with a suppurating knee-joint. It had been coming on for six weeks, and had followed, in three days, upon a miscarriage at the second month. The symptoms of inflammation of the joint had been very acute and the constitutional disturbance severe. When I saw the patient the joint was much swollen, hot, and painful, and any attempt at movement caused great distress, and severe constitutional disturbance existed. The patient's powers were very feeble. On October 8th a splint was applied and free incisions made into the joint, one on either side of the patella. Pus and broken-up tissue escaped. Water dressing was applied. From this moment things began to mend; fever and other symptoms disappeared. The woman took food freely and pain gradually subsided. Anchylosis also went on rapidly. On December 9th, on removing the splint, the joint appeared to be fixed. The wounds had healed, and all constitutional symptoms had disappeared. On Jan. 10th, the woman walked out of the hospital, wearing a good leathern splint, with a firmly anchylosed joint. In January, 1868, she was still well, wearing the splint. She could walk about freely, without pain or inconvenience.

Case 22. *Acute suppuration of the knee-joint, following a puncture into the articulation; the subject of the pulpy disease of the synovial membranes; free in-*

cisions into the joint; anchylosis. (Reported by Dr. P. H. Pye-Smith.)—Ellen C., aged six, a fair but healthy-looking child, was admitted into Guy's Hospital, under Mr. Bryant's care, on December 10th, 1861, for some disease of her right knee. It appeared that the disease had commenced about twelve months previously by swelling of the joint, this swelling being accompanied with pain and heat in the part; it steadily progressed for nine months, when she applied (some three months before admission) to a hospital, where an opening was made into the joint on its inner side to let out what was believed to be fluid, but nothing escaped, and as a result acute inflammation of the joint followed with suppuration. The child's parents, not wishing the child to remain longer in that institution, removed her, and brought her to Guy's. When admitted the joint was much enlarged, and was suppurating profusely. The slightest movement caused intense pain. The child looked anxious and worn, and had little power. Mr. Bryant ordered a back splint to be applied, and water-dressing to the knee, quinine and wine being given internally. In a week's time, as the opening into the joint was small and suppuration profuse, Mr. Bryant made a free incision into the joint on the outside of the patella, giving exit to pus and broken-up tissue, and from this time everything went on favourably; the discharge gradually diminished, surgical fever disappeared, and the powers of the patient improved. On April 12th, 1862, or four months after admission, the joint was firmly anchylosed in a straight position, all suppuration had ceased, and the child's health was re-established. A splint was kept on the back of the knee for some months subsequently as a precautionary measure, and a good leg was secured. The child left the hospital on Aug. 10th with a useful limb, and in good health. She was heard of one year subsequently, and had free use of her limb.

Case 23. *Abscess in shoulder-joint; recovery with anchylosis.*—Walter D., aged four, came under my care at Guy's Hospital on Jan. 28th, 1866, for what appeared to be an abscess around the left shoulder-joint. It had been coming on gradually without any assignable cause, with pain and swelling, the former at times having been very severe. When he came under my care a large abscess existed, surrounding the whole shoulder. No movement of the limb could be allowed, and any attempt gave severe pain. It was opened freely in front where it was pointing below the tendon of the pectoral muscle, and many ounces of pus let out. In a few days another opening was naturally made behind the joint. The bone about the upper third of the arm and about the joint was felt to be greatly thickened. On March 21st things had much improved. There was still some discharge from the sinuses about the joint, but much of the thickening had gone down. It was clear also that the head of the bone was becoming rapidly fixed to the scapula. On June 5th all the sinuses had healed, and in August the head of the bone had become completely anchylosed to the glenoid cavity.

Case 24. *Suppuration of elbow-joint after injury; excision contemplated; anchylosis.*—Alfred T., aged nine, came to me at Guy's Hospital on May 19th, 1862, with suppuration of the right elbow-joint. The disease had been set up in the joint some months previously by a blow; an abscess rapidly formed in the part, accompanied with great pain and severe constitutional disturbance. When I saw the lad the joint was much swollen, and several sinuses existed discharging freely. Any attempt at movement caused pain. The sinuses passed directly into the joint. A splint was applied, and tonics, as quinine, given. On June 1st the suppuration was profuse, and on July 10th the same report was recorded. The boy was ordered to come into Guy's to have excision performed, but this was refused; consequently, a free incision was made into the joint. In another month all the symptoms began to improve; the swelling of the joint began to subside, and the discharge to lessen. By October 20th the report states that the boy was convalescing, and in January, 1863, the arm had become stiff and good anchylosis had taken place. The joint was fixed at a right angle.

I might quote other cases to illustrate the value of the practice I am now advocating, particularly of suppuration of the smaller joints; but I think I have done enough to prove that it is of use in a large number of examples of disease of the joint ending in suppuration, more particularly of the synovial membrane, and that, by the adoption of such a practice, a mobile joint may be hoped for with some confidence, even after suppuration. I trust I have also done something to show the value of a correct diagnosis as to the seat of the disease—a point which is to be made out only by a careful consideration of the clinical history of the case—before a plan of treatment is adopted; and that I have strengthened somewhat the hands of the surgeon in aiding natural processes in the cure of disease. In doing this I feel I am only building upon the suggestions made by Mr. Gay in the Medical Times and Gazette, vol. xxiv., p. 546 (Lond. Med. Soc., November 22nd, 1851); and if I have added to the value of his suggestions anything of my own, it has been from the experience I have acquired as to the great importance of the plan of treatment he there inculcated.

These observations were written in May, 1869, in a paper I published "On the Treatment of Suppurating Joints by Free Incision" in one of the journals, and I may add that subsequent experience has but confirmed me in the impression I had then formed. A free cut into a suppurating or disorganised joint, whether associated or not with bone disease, is rarely followed by any other than a good result. When the suppurating process is due to synovial disease, a recovery without further surgical interference may be looked for. When due to local necrosis the incision helps nature towards the recovery of the cases by expediting the process of exfoliation, and the subsequent removal of the bone by either natural processes or some surgical proceeding. And in still more severe cases the incision gives relief, and in no way tends towards inducing any increase in the mischief.

"The surgeon may, in pathological amputations, fearlessly divide tissues infiltrated with organised inflammatory products, and even cut through the walls of suppurating cavities, or through diseased joints, more particularly to save amputation above a joint."

I have followed this practice for many years, and have never had any reason to regret doing so. The parts divided have united as well as they could have done under other circumstances, and in some instances I have been disposed to think they have united better. In the joint cases in which I cut through the articulation the success was always good. The following cases will illustrate these points.

Case 36. Acute ostitis of tibia; disorganisation of knee-joint; amputation; flaps infiltrated; endostitis of femur; removal of sequestrum; recovery.—Jacob B., aged twenty, a labourer, came under my care at Guy's Hospital, in August, 1863, for what appeared to be a phlegmonous inflammation of the whole of his left leg and suppuration of the knee-joint, with necrosis of the tibia. From the history of the case it seemed that the affection had commenced two months previously as an acute inflammation of the tibia, and that suppuration rapidly followed the early symptoms, with disorganisation of the knee-joint. The diseases when seen had extended from the bone to the joint, and it was clear that nothing but the removal of the leg could be entertained. I then thought that the amputation must be performed above the knee, although the thigh was so infiltrated with inflammatory material that the position of the amputation was not so easy to determine. From the history of the case, however, there was no evidence of disease of the femur; consequently I determined to remove the limb as near to the knee-joint as I could, and this I did on Sept. 15th. I amputated by making a long anterior flap from the front of the knee, and a shorter posterior. I had to dissect both flaps upwards with some care, the parts cutting like brawn from being infiltrated with lymph. The femur I divided close above the condyles. I brought the parts together with sutures, and primary union of nearly the whole surface took place. There was no retraction of flaps; indeed, the stump united and repaired better than most stumps. Only enough, however, when the parts had repaired, without any apparent reason, endostitis attacked the shaft of the femur, which ended in necrosis, and nearly the whole bone was subsequently removed, the dead shaft being drawn out of its sheath (periosteal) from the end of the stump, and a good recovery ensued.

This operation was performed in 1863, before I had had much experience in amputation at the knee-joint. Had the case occurred more recently I should have treated it differently, and amputated at the knee-joint, and thus, by avoiding making a section of bone, I should probably have had no such consecutive ostitis and necrosis of the stump as took place.

Case 37. *Disease of knee-joint; destructive synovitis; amputation of thigh; flaps infiltrated; rapid union.*—Charlotte R., aged twelve, pale but fairly nourished, was admitted into Lydia Ward on Sept. 18th, 1872, her right knee being much swollen and twelve inches round, whilst the left was only ten inches and a half. On the outer side there was an open wound about two inches long by one and a half. There was fluctuation in the swelling, but the patient could move the joint. The head of the tibia appeared to be enlarged. The patient's father and mother were alive and well. She had small-pox six years ago. Five years previously she thought she struck her knee; she had great pain in it at the time and it was swollen, but movement was perfect. She attended St. Batholomew's as an out-patient for about a month. She took some medicine, and was ordered to poultice the knee, after which it became better, until eight weeks before admission, when she went as an out-patient to St. Thomas's. It was bandaged every week for six weeks, and her friends then called in a surgeon, who applied first a poultice, and then eight leeches, which relieved the pain. He then lanced the knee, and a considerable discharge came from it; he afterwards advised her to obtain admission at Guy's. On Sept. 19th the swelling was opened, but no discharge came; a piece of lint was inserted. Four days afterwards the leg was put on a straight splint. On the 25th a great deal of discharge came away every time the poultices were removed; the piece of lint was removed. Five days subsequently a small red spot, three-quarters of an inch in diameter, appeared on the inner side of the knee, and looked as if it would break down. On Oct. 2nd amputation was performed by antero-posterior flaps of skin and muscle. The muscles were infiltrated, and did not retract when cut. The thickened tissues around the artery were slit up to allow the femoral artery to be twisted. The flaps were brought together with carbolised gut sutures, and the wound dressed with dry lint, covered with cotton wool. Six inches of femur were removed. There was extensive pulpy thickening of the synovial membrane and surrounding ligaments, this tissue in many places hiding the articular surface of cartilages. The crucial ligaments were soft and easily cut. The articular cartilages were quite healthy. On the 3rd of October the pulse was 124, the temperature 98·2°; on the 7th the pulse was 112, the temperature 99·2°. The leg was dressed; the parts looked healthy, and there was hardly any discharge.—Nov. 4th: The wound had been dressed every second day from the last date; the stump looked healthy. Four days later some exuberant granulations were touched with caustic, and a fortnight later with blue stone. This was repeated on December 3rd, and again on the 5th, when the wound was healing well. The patient progressed uninterruptedly, and was discharged on January 12th, 1873, the stump being almost healed, and in other respects quite well.

Case 38. *Extensive disease of knee-joint; Carden's amputation through the condyles; integuments and flaps infiltrated with lymph; recovery.* (Reported by Mr. Congdon.)—Samuel J., aged forty-four, was admitted into Guy's Hospital on the 5th of November, 1869, under the care of Mr. Bryant, with extensive disorganisation of his left knee-joint. It began fifteen months before, after a blow, with pain and swelling. Abscesses formed, and he went to a London hospital, where they were opened; but it was not supposed the abscesses communicated with the joint. He had been unable to put his foot to the ground for months. The man had lived hard. On admission the leg was flexed on the thigh at a right angle; the knee-joint was much swollen, and the skin shining from distension. It measured eighteen inches round—four more than the right. The enlargement was uniform, extending half way up the thigh; it had a soft semi-fluctuating feel. Any attempt at manipulation caused severe pain. Sinuses existed in the popliteal space and on the outer side of the joint, discharging pus. Nothing but amputation could be entertained. On November 19th Mr. Bryant performed the operation after

Carden's method, making one long anterior skin flap and a short posterior. Mr. Bryant made this posterior flap longer than Carden suggests, having found it necessary to do so. He divided the femur through the condyles. The flaps were brawny from inflammatory fibrinous infiltration, and a large abscess was cut through, its walls being left in the flaps. The popliteal vessels were secured by torsion and the parts brought together, the flaps meeting behind and two inches above the end of the bone. The stump was dressed with dry lint and covered with cotton wool; it was fixed on a splint. After the operation the man went on favourably in all respects; his temperature never rose above 99°, and the parts healed well, although a small abscess which formed in the stump retarded convalescence. He left the hospital well, with a good broad stump, on January 12th, 1870.

Case 39. *Necrosis of left tibia; albuminuria; amputation at knee-joint; parts infiltrated with lymph; recovery.* (Reported by Mr. F. E. Barrow.)—Ed. L., aged fourteen, was admitted into Lazarus ward on the 7th September, 1868. His parents, two sisters, and four brothers, were alive; one brother had died of phthisis. He had never had rheumatic fever; but, when four years old, he had measles badly, and was ill for two weeks. A fortnight afterwards he had scarlet fever, and was ill with it for two months. His mother then noticed that his body became swollen; this was said to be due to debility, but the state of his urine at the time was not known. The left leg and knee became swollen, and pained him when he put his foot to the ground, giving way under him. He then walked with the aid of a stick. The leg was strapped, and he afterwards had a gutta-percha splint applied, but no improvement took place. Seven years before admission abscesses formed on each side of the patella; poultices were applied, but the wounds never healed, anasarca continuing all through. When admitted, the leg was flexed upon the thigh at an angle of 120 degrees, the foot being extended so as to be almost in a line with the leg. The tibia and fibula seemed to be slightly dislocated outwards and backwards. There was a slight motion in the knee-joint, and the patella was fixed firmly to the outer condyle. The leg and foot were œdematous. Above the knee in front and on the whole of the inner side of the leg were cicatrices of old ulcers or sinuses; on the inner side, below the tuberosities, there were some openings still discharging. The skin in these parts was smooth and glazed, and had a peculiar warty appearance.—Sept. 10: Urine loaded with albumen. Spleen rather large. Œdema in lumbar region and slight in right foot, besides the swelling of the diseased limb. There was slight systolic murmur at the base of the heart.—On the 15th, the leg was amputated at the knee-joint; the patella was removed. A small posterior and a long anterior flap were made, the popliteal artery being twisted. Carbolic-acid dressings were applied to the stump, after which he passed black urine. A week later permanganate-of-potash solution was substituted for carbolic acid. On the 28th the right testicle was swollen, but this disappeared ten days afterwards, when the whole of the left side of the face became swollen, and he suffered from diarrhœa. By the 12th of October he was very much improved, and walked about the ward with the aid of a crutch. On the 22nd the stump had all but healed; there was very slight discharge. Dry lint was applied. By the 26th the patient's stump had quite healed up, and he went out, his urine being still loaded with albumen. In 1870 this boy was still well, and his urine still contained albumen.

Case 40. *Disease of knee-joint; amputation at joint; recovery.* (Reported by Mr. Hanton.)—Thomas N., aged sixteen, was admitted into Guy's Hospital on December 29th, 1870, under Mr. Bryant's care, with disease of the left knee-joint of ten years' standing. The knee was flexed at a right angle; the tibia displaced backwards into the popliteal space; limb atrophied from paralysis. On January 14th, 1871, Mr. Bryant amputated the leg at the knee-joint, making a long anterior and a shorter posterior flap, and twisting the arteries. Good union followed, indeed primary union, the boy leaving the hospital within the month with a capital stump.

Case 41. *Old disease of knee; amputation through knee-joint; recovery.* (Reported by Mr. W. Lane.)—Minnie H., an anæmic, sickly-looking girl, thirteen years old, was admitted into Lydia ward on March 4th, 1874. When two years old she had a fall which hurt her very much. Her leg began to swell, and she was brought to Guy's Hospital, where she remained some months. The leg was probed two or three times, and she was then moved about from one hospital to another. She was in May, 1872, readmitted into Guy's, when a bit of bone came away from the internal tuberosity of the tibia, and another piece shortly after from the same place. When admitted the leg was flexed upon the thigh at an angle of 120°; the foot and leg were both rotated outwards. She had two swellings, one on the internal tuberosity of the tibia and the other below the patella; also a large glandular swelling occupying the popliteal space, and causing pain, especially during the night, disturbing her sleep. On March 5th the glandular abscess in the popliteal space was opened, some dirty-coloured pus escaping. Carbolised lint was inserted into the wound, and left there for two days, when it was removed. The patient was better and freer from pain for some time after this, but became much agitated upon finding that an operation was necessary. She, however, became weaker, and on the 24th a large hollow was found in the head of the tibia communicating with the joint. The leg was then removed at the knee-joint by one short anterior flap and a long posterior skin one, little blood being lost. The stump was fixed upon a splint and dressed with dry lint. There was fibrous anchylosis between the tibia and femur. Cartilage and a thick layer of fibrous material still remained on the tibia. It was necessary to make a short anterior flap on account of the opening over the head of the tibia. The communication of the epiphysis with the shaft was ossified. Temperature 99°; pulse 102. On the following morning she complained of feeling sick and of not having slept, so a subcutaneous injection was given, which gave her rest. On the 26th she was very drowsy, but there was no constitutional disturbance. Next day it was found that there had been a free discharge from the stump. The temperature was 98·4°, and the pulse 98. On the 28th the wound was dressed for the first time. There was a little burrowing in the posterior flap, and the pus made its way through the opening in it. The sutures were removed on the 30th; the wound was then progressing slowly, the burrowing being less. Up to this date the injections of morphia had been continued; they were now left off, and the patient did not sleep so well at night. On April 7th it was found that she had been progressing favourably. There was a little burrowing at the inferior extremity of the wound, which seemed to come from the lower part of the stump. The flaps were going on very nicely. On the 14th the patient's health seemed improving. The wounds had been dressed with gutta-percha strapping and lint, carbolic-acid solution being washed over with a camel's-hair brush. On the 22nd there seemed to be more burrowing, and the skin on the posterior flap was breaking down in small round openings, but she was able to sit up and felt better. By May 7th the patient was able to go about on crutches, the healing process proceeding well; her appetite was good, and she slept well at night, although she suffered considerable pain. On the 19th the skin was contracting rapidly; there was occasional jumping pain in the stump, accompanied by feverishness. On June 4th the wounds of the stump were healing, but the granulations did not look very healthy, and had increased a little in size; but the child was able to get about on crutches. Was much better on the 8th, and on the 16th left the hospital for a convalescent home, where she rapidly convalesced.

Case 42. *Acute ostitis and necrosis, disease of ankle- and knee-joints; knee displaced backwards; amputation at knee-joint; recovery.* (Reported by C. J. Symonds.)—Caroline E., aged twenty-six, was admitted into Lydia ward on the 29th October, 1873. She had always been weakly, and when young had suffered from an abscess on her head, together with weak eyes. Nine months before admission she felt a sudden pain in her right leg during the night. The next day her calf began to swell, and became red; her leg the ensuing night "bent up," and she was unable to straighten it. The swelling then increased, and she poulticed it for three months. It was then lanced over the tibia near the ankle, and a great deal of pus came away. Fresh abscesses subsequently appeared; and she was never able to leave her bed nor to straighten her knee. When admitted, her knee was bent nearly at a right angle; the tibia and fibula were displaced backwards; there were several openings along the line of the tibia from knee to ankle, dead bone being seen at one place for an inch, and here a small artery could be seen pulsating. There was no movement in the knee, and the ankle was not of much use. There was a good deal of pain in the leg, and considerable discharge. On Nov. 7th the patient was placed under chloroform, the leg was bandaged with an elastic bandage from the foot upwards, and Esmarch's india-rubber band tied above the knee. Amputation was then performed at the knee-joint. Partial anchylosis had occurred. The extremity of the internal condyle of the femur was removed, the other parts being healthy. The popliteal artery was ligatured, and torsion applied to others. The stump was fixed upon a splint, and the wound dressed with dry lint, covered with cotton wool. Pulse 112, small and feeble ; temperature 99·2°. She had a quiet night and slept well, but felt sick ; she, however, was able to take milk, wine, and beef-tea without vomiting. She had a little head-ache on the 9th, which continued.—28th: She had progressed without interruption, excepting the nausea after eating and occasional pains in her leg, principally in the night. The flaps had now nearly united, there being some slight discharge coming from the natural opening left in the anterior flap.—Dec. 13th: She had suffered a great deal of pain in the stump, especially at night. Had felt very sick, and vomited on the 9th. She was able to sleep but very little, and had slight diarrhœa. Poultices had been applied to the stump, which relieved the pain; but the nausea still remained, as did also the diarrhœa.—22nd: The leg was improving, only a slight discharge appearing; the diarrhœa had ceased, but returned again, and continued up to the date of her discharge from the hospital. She had also suffered a good deal from pain in the abdomen and shooting pain in the stump, which disturbed her rest. She was, however, able to get up on the 2nd of January, 1874, looking much better, and left the hospital on the 3d. One month later she was well and about.

Case 43. Chronic osteo-arthritis of knee-joint; amputation at the joint; recovery with an excellent stump. (Reported by Mr. Bottamy.)—Thomas S., aged forty-eight, a porter, was admitted into Guy's Hospital, under the care of Mr. Bryant, with extensive disease of the right knee-joint. He had been a healthy man till ten years ago, when he had scarlet fever, and after that he had been subject to rheumatism. Two or three years ago he first noticed some swelling in his right knee, and this had gradually increased. For some months he had been unable to walk or work. On admission the right knee was much swollen : it measured in circumference 21½ in., the left measuring only 14¼ in. The condyles of the femur were immensely enlarged, and crests of new bone surrounded the condyles. The inner condyle was much longer than the outer. The head of the tibia was expanded and altered in shape. The leg was like a flail; it could be moved and bent in any direction : all its ligaments were gone. Amputation was suggested and consent obtained, it being clear that nothing less was of use; and with such a limb, however artificially supported, the man could not work. It was consequently performed by Mr. Bryant on January 11th, 1870, the leg being taken off at the knee-joint, with a long anterior and a shorter posterior flap, the arteries being twisted. The operation was followed by little or no constitutional disturbance, and convalescence went on steadily and well. It was retarded a little by the exfoliation of a small shell of bone from the edge of the internal condyle of the femur, but nothing more, and the formation of one or two abscesses ; but he left the hospital on March 25th with a strong stump that could bear any reasonable amount of pressure, and could support his body. As an example of amputation at the knee-joint it was very good; but, considering the condyles of the femur were expanded and thickened from rheumatic disease, the result was most satisfactory. The head of the tibia after the amputation was seen on its inner half to have been ground down for more than one inch by the inner condyle of the femur. All the articular cartilages were gone.

Remarks.—These eight cases are, I think, enough to prove the proposition I have advanced. In Case 36—one of disease of the knee secondary to disease of the tibia, that occurred in 1863—I wrongly amputated above the knee, and as a consequence had a secondary ostitis and necrosis to contend with. Had I at that time my present knowledge, I should have taken the leg off at the knee-joint, when no such complication as I have recorded would probably have taken place. In Cases 37 and 38, both of disease of the knee, the flaps were brawny, and yet a rapid repair followed; the division of tissues infiltrated with inflammatory products having no injurious influence. In Case 39—one of disease of the knee-joint—albuminuria complicated the treatment, and yet no bad result followed an amputation at the knee-joint. In the other cases, four in all, amputation at the knee-joint was performed through the diseased tissues, with a good result. In all the cases the diseased parts were alone removed; no healthy tissues were sacrificed for the sake of the operation; and in all good results ensued.—*Lancet, Jan.* 30 *and Feb.* 20, 1875, *pp.* 154, 263.

35.—ON A MODIFICATION OF THE METHOD OF USING MALGAIGNE'S SCREW-HOOKS IN TRANSVERSE FRACTURE OF THE PATELLA.

By James Spence, Esq., F.R.S.Ed., Professor of Surgery in Edinburgh University.

Although the screw-hooks designed by M. Malgaigne for transverse fracture of the patella are perfect as a mechanical contrivance for maintaining the fragments in accurate apposition, they have never yet been very generally used, owing to the pain and irritation caused by their sharp points when inserted through the skin into the broken fragments of the bone. Of late years I have adopted a method of using these hooks, which I find to answer the purpose admirably, without inserting the hooks through the integument. The two fragments of the patella being held by an assistant in as close apposition as the effusion in the knee-joint will permit, I apply a broad piece of strong moleskin adhesive plaster of the shape shown in Figs. 1 and 2 A to the thigh above the upper fragment of the patella, and another piece of plaster of the shape shown in Figs. 1 and 2 B from the upper part of the leg to the lower fragment of the bone. On the space marked C in the figures two or three layers of plaster are applied to protect the skin from the points of the hooks, which are inserted there above and below the fracture as shown in Figs. 3 and 4. The screw is then gradually tightened, and the fragments are approximated and kept in apposition. The screw requires to be tightened from

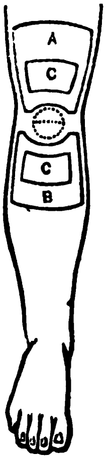


Fig. 1.

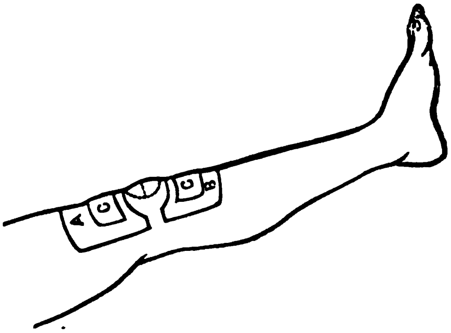


Fig. 2.

time to time, and thus the fracture is kept accurately adjusted and in close apposition without any circular constriction of the limb. Care must be taken to have the integuments on the stretch when the plasters are applied. The plasters should not be much heated, otherwise they would be liable to slip, and they should be firmly adherent to the skin for some time before the hooks are inserted, or traction made on them by using the screw. For greater security against the plasters slipping, the main portions may be made sufficiently long to encircle the limb, and supported for twenty-four hours with a few turns of a roller. I prefer, however, the method described, as the plasters, if carefully applied, generally hold firmly, and should they yield they can be easily reapplied. I may mention that I have also tried this method in treating rupture of the ligamentum patellæ, but it does not answer so well in that injury as plasters with straps, one passing on either side of the patella, from the upper plaster to buckles fixed on the lower plaster. In both these injuries the limb should be placed on an inclined plane, or, better, slung at a corresponding inclination.—*Practitioner*, *March*, 1875, *p*. 183.

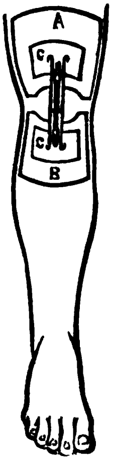


FIG. 3.

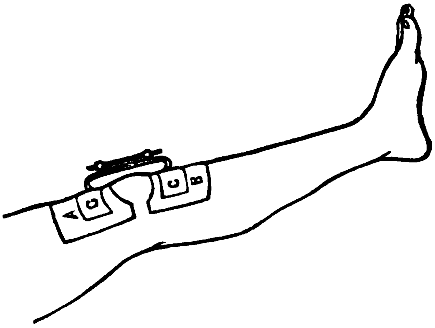


FIG. 4.

36.—THE TREATMENT OF FRACTURES OF THE PATELLA AND OLECRANON BY THE EXPECTANT METHOD.

By ARTHUR FERGUSSON M'GILL, Esq., Surgeon to the Leeds Public Dispensary.

It may be taken as an axiom in medical and surgical practice that the treatment of those diseases and injuries for which many remedies have been advised is as a rule unsatisfactory. For example, many drugs have been used in the treatment of tetanus and hydrophobia, and it would be impossible to name two diseases in which treatment is of less avail. In a minor degree this remark applies to the treatment of fracture of the patella. There is no fracture to which a greater variety of splints and apparatus has been applied, and yet the results are by no means satisfactory; bony union is of rare occurrence, and consequently the affected limb rarely becomes as strong as it was before the accident. It has fallen to my lot to see, and have more or less under my care as a house-surgeon, a considerable number of these fractures. The treatment adopted has been chiefly of four kinds.

(1.) Malgaigne's hooks, of which I need only say that though they are theoretically of great value, practically their use is found to be attended with considerable danger. I well remember a case which occurred in King's College

Hospital during the winter of 1864. The patient was a drunken woman who sold play-bills in Drury Lane. She was admitted with fracture of the patella; the hooks were applied with great skill and care, but erysipelas and diffuse cellular inflammation supervened, and she died from the effects of the treatment.

(2.) Professor Wood's method, by a figure-of-eight bandage passing through hooks on the under surface of the splint. Though by this means the fragments can be closely approximated, yet, owing to the direction in which the bandage is applied, the fragments are tilted forwards, and consequently placed in a position which does not favour union.

(3.) Samborn's method. A pad being placed above and below the broken fragments, a long strip of plaster is applied on the anterior surface of the thigh and leg, extending from the hip to the ankle; a loop is left over the knee-joint, and into this a stick is inserted; by twisting the loop by means of the stick, the pads are brought together and drag the fragments of the patella with them. By this means they can be closely approximated, and this without any objectionable tilting. The results obtained by this plan of treatment are excellent.

(4.) The plan of treatment adopted by Mr. Pridgin Teale does away with the necessity for any special apparatus, and combines the two great desiderata, simplicity and efficiency, and I think may with propriety be designated the "Expectant Treatment." Mr. Teale has most kindly allowed me to take the two following cases from his notebook at the Leeds Infirmary. They are the first two cases in which this method was adopted, and well exemplify the treatment.

A railway porter, aged 26, was admitted into the Leeds Infirmary Dec. 22nd, 1865, under the care of Mr. Teale. While moving a large iron wheel, it fell over and knocked him down, striking his knee as it fell. He was unable to walk, and was immediately brought to the Infirmary. On examination it was found that the patella was fractured transversely about its centre, and that the fragments were separated for half an inch; the joint was much swollen. The leg was placed on a pillow and slightly bent between sandbags, and evaporating lotion was applied. By Jan. 12th the distance between the fragments had diminished to one quarter of an inch; by Feb. 4th they were almost touching; on Feb. 11th the patient was allowed to get up with a starch bandage on; and on Feb. 20th he was made an out-patient, the fracture being united without any perceptible interval, apparently by a band of strong fibrous tissue.

The next case is even more striking. A dyer, aged 43, on Jan. 23rd, 1867, fell on his knee, striking it violently against a stone; he was brought the same day to the Leeds Infirmary, and was admitted under the care of Mr. Teale. A fracture of the patella was discovered, but owing to the large amount of effusion in the joint, the distance between the fragments could not be ascertained with certainty. The leg was placed on a straight splint, with the heel slightly raised, and evaporating lotion was applied. In five days (Jan. 28th) the effusion had much subsided, and from this date the interval between the fragments was measured with great accuracy. The measurements were as follows:—Jan. 28th, $1\frac{1}{4}$ in.; Feb. 4th, $1\frac{1}{16}$ in.; Feb. 11th, $\frac{3}{4}$ in.; Feb. 18th, $\frac{1}{2}$ in.; Feb. 25th, $\frac{3}{8}$ in.; March 4th, $\frac{1}{4}$ in. On March 11th the splint was removed, and a knee-cap of chamois leather having been fitted accurately to the joint, he was made an out-patient; the union being apparently strong and fibrous.

Since the above date, Mr. Teale has treated all cases of fracture of the patella in a similar manner, and I can testify that in those cases in which I have seen it adopted the result has been equal to that which can be obtained by any other plan, while the comfort of the patient has been much greater. It is a matter of but little consequence whether the limb be placed on a straight back splint, or on a pillow between sandbags. In either case the patient should be confined to bed for six or eight weeks, and when allowed to get up should be fitted with a soft leather splint, which will limit but not arrest the movements of the joint.

Three reasons can be assigned for the gradual approximation of the broken fragments:—(1) At the time of the injury the quadriceps extensor is thrown into a state of tonic contraction; after a few days this contraction relaxes, and the muscle gradually regains its normal length, thus removing all traction from the broken bone. (2) The effusion which always occurs at the time of the accident is slowly absorbed, and by its removal allows the fragments to fall together; and (3) the fibrous band which is formed between the opposing surfaces has, like all other cicatricial tissue, a tendency to contract, and thus to complete the approximation.

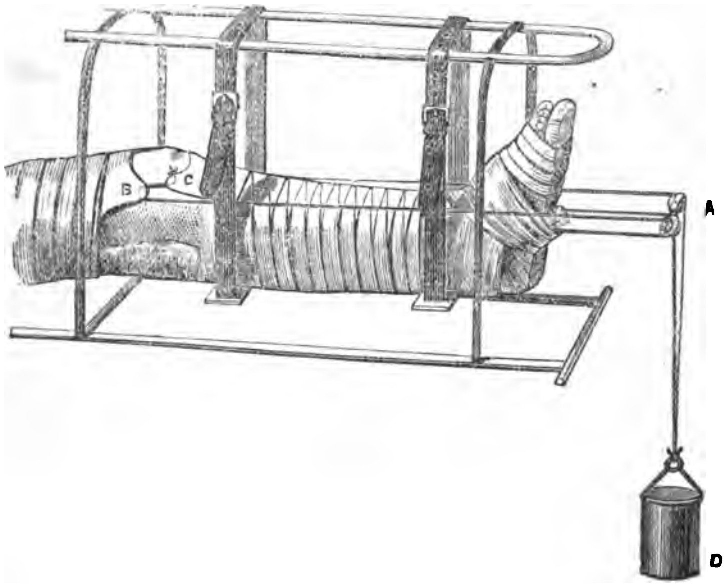
Fracture of the olecranon is both a less severe and less frequent accident than fracture of the patella. The union is occasionally bony, but usually by fibrous tissue. In the latter case the movements and usefulness of the arm are but slightly, if at all, impaired. Before I was aware of Mr. Teale's treatment for fracture of the patella as described above, I was in the habit of treating these cases by placing the arm on a rectangular splint in a semiflexed position. The results obtained in this way are as good as those obtained by any other method. Bony union will occasionally occur, as the following case will show. In 1870 I had under my care a boy, aged 14, who had fractured his olecranon process by a fall on the elbow. The upper half of the process was freely moveable with crepitation, but was not removed far from its normal position. The arm was kept on a rectangular splint for a month. The fractured piece was then firmly united to the shaft, and it was only by a careful examination that the seat of the fracture would be detected. In other cases the result has not been so good as this, but in all there has been a gradual approximation of the broken fragment to the shaft, similar to that described above as occurring in fracture of the patella. The comfort of the patient is much greater than if the arm were kept in an extended position; and if anchylosis should occur, as it is reported sometimes to do, the limb would be in a useful and not in a useless position.—*Practitioner*, *March*, 1875, *p*. 188.

37.—ON THE TREATMENT OF FRACTURE OF THE PATELLA.

By Geo. W. Callender, Esq., F.R.S., Surgeon to St. Bartholomew's Hospital.

The accompanying woodcut illustrates the plan of treating transverse fracture of the patella which has been employed for some years in my wards. Since referring to this method in the last volume of our Hospital Reports, several cases have been under treatment with good results, not only as to the close approximation of the fragments, but by the establishment of such firm union as simulates, if indeed it be not repair by true bone formation. I think the arrangement we employ has an advantage over the plan, which is advocated in America by Dr. Lewis, of drawing together the two portions of the bone by means of long strips of plaster, because it enables continuous traction to be made in a horizontal line with the patella, and consequently there is less risk of tilting forward the broken edge of either fragment when traction is established.

The following is the manner of applying the apparatus:—"A day or two after admission the limb is placed on one of Neville's splints, to the foot-piece of which is clamped an iron, with two arms projecting beyond the foot-piece, at the end of each of which a pulley is fixed (A), a line from which will fall clear of the foot of the bedstead. A piece of ordinary adhesive plaster is applied to the front of the thigh, its distal end being curved to fit the upper margin of the patella, each horn of the crescent being arranged so as to form a loop (B). The edge of the plaster is protected by a strip of lint to prevent it from irritating the skin when under traction. A similar provision is made for the leg and for the lower fragment of the patella (C), and both pieces of plaster are further secured by bandages passing over them and round the Neville splint. If a piece of cord is attached to each of the loops at the horns of the lower plaster (C), and is then passed through the upper loops (B), and is thence carried to the pulley at the end of the outrigger, below which the two cords may be united and made to support a weight (D), it is evident that the entire weight-traction will draw the horns of the two crescents together and approximate the fragments of the knee-cap. The cutting out and adapting of the pieces of plaster require care and some practice, and from time to time these may need to be readjusted; but the whole arrangement is simple, and, I think, is worth further trial."



If there is any difficulty in obtaining the Neville splint and the iron clamp, a splint of wood with holes drilled (at a level to be determined on in each case) through the foot-piece to carry the cords will suffice as a substitute, or a pulley may easily be fixed to either side of such a foot-piece. It is necessary that the plaster should hold firmly. We find that which is in use at the Seamen's Hospital at Greenwich one of the best in this respect.—*Practitioner*, *March*, 1875, *p.* 186.

38.—THE TREATMENT OF CHRONIC BURSITIS PATELLÆ, AND ON ANTISEPTIC SURGERY GENERALLY.

By Joseph Lister, Esq., F.R.S., Professor of Clinical Surgery in the University of Edinburgh

The effect of an accumulation of serum in keeping up inflammatory disturbance, and the usefulness of the drainage-tube combined with antiseptic management under such circumstances, are well exemplified by chronic bursitis patellæ, with fluid effused into the sac. The skin being washed with 1 to 20 carbolic lotion, a puncture is made under the spray with a tenotomy knife, sufficient for the introduction of a drainage-tube scarcely larger than a crowquill, care being taken that it penetrates fairly into the cavity of the sac, which often lies at a considerable depth in consequence of thickening of the membrane and of surrounding textures. The narrow drainage-tube may be readily inserted by means of a simple modification of the dressing forceps introduced by myself several years ago, but hitherto unpublished. The blades, which are straight, are ground down to the size of a probe at their extremities, so that they can be passed into a very small orifice. This instrument, which goes by the name of sinus-forceps among the Edinburgh instrument-makers, will be found very useful for extracting small exfoliations and for various other purposes.

The clear fluid contents being all pressed out of the sac, a gauze dressing is applied, and retained in position with a figure-of-8 bandage. The dressing being changed next day, the gauze is found considerably soaked with serous discharge, but, if the tube is acting efficiently, nothing can be pressed out of the cavity. And it will very likely be found that the end of the tube is projecting slightly above the level of the skin, and cannot be pushed in again to its original position, so that it is necessary to shorten it a little. This depends on the fact that, even within twenty-four hours of the opening of the sac, the chronic thickening of the textures has markedly subsided. The same thing will be probably still more apparent when the dressing is again changed after forty-eight hours more, when also the serous stain on the gauze resulting from two days' discharge will be only a small fraction of that seen after the first twenty-four hours. The tube being shortened to the requisite degree, the dressing now applied might be left untouched for a week so far as regards the purpose of ensuring absence of putrefaction; but it will be well to expose the part again in two or three days in order to ascertain whether or not the drainage-tube may be dispensed with; the rule being that it should be continued so long as the serous stain on the gauze is more than the puncture, as distinguished from the interior of the sac, would account for. This is probably the case within a week of the opening of the bursa; and then, the drainage-tube being discontinued, and a small piece of protective being interposed between the puncture and the gauze so as to permit cicatrisation, the little sore will be found completely healed in the course of another day or two. At the same time the sac will be free from any fluid accumulation, and the surrounding thickening either quite gone or quickly disappearing.

While we have thus a sure, speedy, and (except the infliction of the puncture) a painless method of remedying a troublesome complaint, the results are of considerable theoretical interest. It is plain that the antiseptic employed does not penetrate into the bursa, so as to exert any direct action on the part affected. All that the treatment does is, while guarding against the access of putrefactive fermentation, to provide that the plasma poured out from the synovial surface shall flow freely away as fast as it is effused and never accumulate in the cavity. Yet when these conditions are complied with, the obstinate chronic inflammation, which has perhaps already resisted rest and counter-irritation, immediately proceeds to subside, the morbid tendency of the synovial membrane is soon entirely lost, and the surrounding inflammatory thickening is dispersed. It follows therefore that the presence of the fluid within the sac was of itself sufficient to perpetuate for an indefinite period the state of chronic inflammation. And this fluid being the bland liquor sanguinis, perfectly destitute of chemically irritating qualities, the only possible way in which it could have produced its effect is by mechanical disturbance occasioned by its presence in the sac. In other words, the agency by which the chronic bursitis was maintained was that which, next to putrefaction, is the commonest of all causes of inflammation in surgical practice—viz., tension. Yet, in cases of this kind, the sac is by no means always extremely distended; but, flaccid though it may be, the fluid present in it keeps up by its mechanical influence the tendency to abnormal effusion from the synovial surface and inflammatory hypertrophy in the surrounding tissues. It seems to me important that this point should be capable of being thus clearly demonstrated; because the knowledge that a flaccid collection of liquid acts as a cause of disturbance not only serves to explain the obstinacy of chronic serous and synovial effusions, but throws light upon other important matters, such as the prejudicial effect of even a slight accumulation of serum within a wound, as in the aneurism case above related, or the influence of the presence of the contents of a slack chronic abscess in maintaining suppuration from the pyogenic membrane. And, conversely, this knowledge enables us to understand the benefit often obtained by simply evacuating serous or purulent collections, either as a single remedial measure, or as a preliminary to counter-irritation.

When the evacuation is effected in such cases by means of the aspirator, the piercing canula should be dipped into carbolic oil before introduction. And if, as is often the case, the narrow tube becomes obstructed by lymph or curdy material, there is no objection whatever to the use of an ordinary canula and trocar of any size that may be necessary, provided that the instruments be smeared with the antiseptic oil and the operation be performed under the spray. In abscesses, however, according to my experience, a cure rarely results from evacuation of the contents by an opening which is allowed to close. The plasma which exudes from the pyogenic membrane after withdrawal of the pus will, if retained, nearly always occasion sufficient tension to reproduce suppuration. But if it be allowed to flow freely away through a drainage-tube, under an antiseptic dressing, the pyogenic membrane being freed from the disturbing cause which urged it to perpetual suppuration before the abscess was opened—viz., inflammatory excitement occasioned by tension (greater or less according to the degree of acuteness of the case), while the granulating sac is protected from the new stimulus to which it would be subjected if the abscess were opened without antiseptic measures—viz., the chemical irritation of putrefying material,—the beautiful sight is witnessed of cessation of suppuration from the moment that the original pus is evacuated, the serous discharge diminishing constantly till the abscess cavity is closed.

If antiseptic treatment had done nothing more than create such a revolution in the treatment of abscess and throw such light upon its pathology, it would have well deserved the gratitude of the surgeon.

But in order that such results may be obtained, it is necessary that both the above conditions be complied with—viz., a perfectly free outlet for discharge, and thoroughly efficient antiseptic management from first to last. If the former condition be not fulfilled, inflammatory suppuration from tension will occur; or if the accumulation of fluid be only to a very slight extent, increase or persistence of serous oozing will be the result. And if the latter essential fail to be maintained—as for example, through inefficiency of the retaining bandage, allowing the dressing to become loose or displaced, or through the antiseptic treatment being given up too early, before the sinus has completely closed,—septic suppuration will take place, with its various consequences, such as free incisions and counter-openings, or, in vertebral or articular disease, disaster varying according to the circumstances of the case.

A sponge wrung out of a strong watery solution of carbolic acid (1 to 20) forms a valuable aid to the drainage-tube in preventing, during the first twenty-four hours, the accumulation of blood in wounds having a considerable cavity, such as those left after the removal of tumours. The wound having been stitched and the drainage-tube (or tubes) inserted, a strip of oiled silk protective is laid along the line of incision to keep it moist, and so prevent the sponge from adhering. A soft sponge large enough to cover the entire cavity of the wound, and purified as aforesaid, is then applied, and over it a gauze dressing sufficiently extensive to reach several inches beyond the sponge in every direction. The whole is retained in position by a pretty firm bandage, so as to bring into play the elasticity of the sponge, which keeps the surfaces of the wound in apposition, and, while checking sanguineous effusion, compels that which does occur to escape by the drainage-tube, when it is at once sucked up by the sponge as it oozes from beneath the protective.

If anyone desires proof of the potency of a strong watery solution of carbolic acid to deprive septic ferments of their energy, he cannot do better than consider the results of this mode of dressing. The same sponges are used over and over again till they wear out, and for hospital purposes they are kept always steeping in the carbolic lotion. But in private practice the plan which I have pursued for several years is the following:—The sponges, after being used for an operation, are put into a vessel of water and left there till the fibrine in their pores has been converted by putrefaction into a slimy liquid which can be readily washed out. They are then squeezed in successive portions of water till they cease to discolour it, and, after having been well wrung, they are thoroughly moistened with the 1 to 20 watery solution of carbolic acid. The sponges after being so treated have, very likely, a decided putrefactive odour clinging to them; but this is a matter of no moment. The presence of a little of the *products* of putrefaction will do no harm if the *causes* of the fermentation have been destroyed. And that such is the case is evident from the following considerations:—The sponge, being squeezed as dry as possible when applied, contains but little of the solution of carbolic acid with which it was treated, and this is soon displaced from the parts next the wound, or at least copiously diluted by the effused blood and serum, which are often in such quantity that the red liquid can be wrung out of the sponge when it is removed on the following day. If therefore any septic ferment were present in an active state in the deeper parts of the sponge, the bloody serum could not fail to putrefy, since there is certainly not a sufficient proportion of carbolic acid mixed with it to act as an antiseptic. Yet, in point of fact, putrefaction never does occur in the sponge (provided, of course, that all the proceedings have been, in other respects, conducted antiseptically), and I cannot call to mind a single instance of such an occurrence either in private or hospital practice. It follows that no active septic ferment is present in the portions of such a sponge which become soaked with the serum. Yet before the sponge was treated with the solution of carbolic acid it contained such ferments in abundance; for, not to speak of the residual putrid material left after the often hasty and imperfect washing, the very water with which it was washed teemed with septic ferments, as was clearly demonstrated some years ago by Dr. Burdon Sanderson. How, then, had they been got rid of? They could not be all washed out like the carbolic acid, because, as will be shown in the next paragraph, they are not matter in solution, but solid particles, which must remain entangled in abundance in the porous material of the sponge. The only other possible way in which they can have been disposed of is by the action of the carbolic acid upon them. And thus we are led inevitably to the conclusion that this agent, applied in the form of a strong watery solution, completely and permanently extinguishes the septic energy of putrefactive ferments.

That the septic ferments are solid particles, not material in solution, might be pretty safely assumed from analogy, if it were granted that they are living organisms; though, indeed, I once heard it propounded in conversation by a very sound and eminent chemist that, for aught we could tell to the contrary, living matter in its lowest forms might exist in a soluble condition—an idea suggested by Dr. Sanderson's statement that a drop of water in which no bacteria could be discovered by the microscope will nevertheless give rise to the development of such organisms when added to a liquid adapted for their growth. But those who hold that the septic agents are not organisms at all, but so-called chemical ferments, might with greater justice contend for their possible solubility. The point being of great practical as well as speculative interest, I have been glad to obtain conclusive evidence regarding it from some simple experiments lately performed, and hitherto unpublished. I must content myself on the present occasion with briefly indicating their character.

A series of experimental glasses, contrived so that their contents shall be securely protected from dust, though the atmospheric gases gain free access to them, having been purified by heat, are charged with some liquid, like boiled milk, favourable for organic development and prone to fermentative changes, but uncontaminated at the outset by the presence of any living organism. If the glasses so arranged are left undisturbed, the liquid remains unaltered for an indefinite period, except that its bulk is slowly diminished by evaporation. But if a minim of ordinary drinking water is added to any one of the glasses, its contents will in a few days be obviously altered in chemical character, and before long will probably be decidedly putrid, the microscope at the same time revealing abounding bacteria—a result in perfect accordance with Dr. Sanderson's observations. If, however, instead of an entire minim, a small portion (say a hundredth) of a minim of the same water is added to each of a series (say ten) of such glasses (which can be readily done by means of a small syringe, having its piston-rod in the form of a fine-threaded screw, on which a graduated disc revolves to regulate the amount of liquid emitted from the slender glass tube that constitutes the nozzle of the instrument), a very different result ensues. Some of the glasses probably remain permanently unchanged, as if nothing had been added to them; and those which do experience alteration show plainly, by differences of colour and smell, that they are undergoing various kinds of fermentation, while the microscope shows corresponding differences in the characters of the bacteria found in them.

It is hardly needful to remark that if the ferments were dissolved in the water they would be equably diffused through it, and the same effects would be produced in all the glasses by the addition to each of the same quantity, however small. It is thus conclusively shown, so far at least as regards the fluids which I have hitherto made the subjects of experiment, that the material in water which leads to putrefaction or other fermentative changes in an organic liquid is not in a state of solution but in the form of suspending particles, various in kind, and though present in great numbers, by no means equably diffused, but scattered through the water at various distances, like the amœbæ or other animalcules which people it. This will, I believe, be found to be a sure and important step in proof of the theory upon which the antiseptic treatment is based. But a practical paper like the present is perhaps hardly the proper place for discussing its bearings in this respect.—*Lancet, April* 3, 1875, *p.* 468.

39.—ON A NEW FORM OF "BOOT" FOR THE TREATMENT OF TALIPES EQUINUS.

By Thomas Annandale, Esq., F.R.S.E., Surgeon to the Royal Infirmary, Edinburgh.

The boot was made, at my suggestion, by Mr. Hilliard in September 1870, in connexion with the treatment of a case of talipes equinus. Since then the appliance has proved so successful in treating cases of this deformity in my own practice, and also in the practice of others, that I recommend it with much confidence to the consideration of my professional brethren.

I have used it under three conditions:—1. Without any divison of the tendo Achillis. If the distortion is not very severe, the application of the boot without any operation is perfectly successful. One interesting case, treated under this head, was that of a little girl, both of whose feet were affected with the deformity. The apparatus was applied to both feet, and resulted in a complete cure.

2. With division of the tendo Achillis, and, if necessary, the plantar fascia. In aggravated cases the division of one or both of these structures is usually required, and when the wounds are healed the application of the boot gradually stretches the contracted ligaments and other textures, and so completes the cure.

3. With removal of the head of the astragalus in addition to the division of the tendo Achillis. In one very aggravated case it was found impossible to relieve the deformity, owing to the displacement and projection of the head of the astragalus on the dorsal surface of the foot. I accordingly excised this portion of bone, divided the tendo Achillis, and when the wounds were healed, applied the apparatus until the deformity was relieved.

A short description of the boot will be sufficient to make its principle understood. It consists of a foot-piece and leg-support, which are connected together by a movable joint on each side, so as to allow of flexion and extension of the ankle-joint. The essential part of the appliance is the screw at the back, which is turned by means of a key. When the screw is turned in one direction it elevates the heel, and the appliance can in this way be adapted accurately to the deformed foot. By turning the screw in the opposite direction, the heel is depressed, and the relief of the distortion gradually and efficiently accomplished by acting upon the contracted tendo Achillis and other textures.

The appliance can either be fitted to an ordinary lacing walking-boot, or the foot may be secured to the foot-piece by a padded strap crossing over the dorsal surface of the foot and ankle. Sometimes I use a lacing boot of soft leather, similar to that employed in my boot for talipes varus, to secure the foot. In aggravated cases, or in those requiring operation, a combination of the two latter methods is best. The leg is fastened to the leg-support by a broad padded belt passing round the limb at its upper third. —*Edinburgh Medical Journal, Feb.* 7, 1875, *p.* 700.

40.—ON RECENT IMPROVEMENTS IN THE DETAILS OF ANTISEPTIC SURGERY.

By Joseph Lister, Esq., F.R.S., Professor of Clinical Surgery in the University of Edinburgh.

[Various improvements have from time to time suggested themselves in the means of carrying out the antiseptic principle. After trying a weaker solution of carbolic acid, the 1 to 40 lotion has been returned to, while the saturated watery solution (1 to 20) is still employed for purifying the epidermis of a part about to be operated upon, and for washing accidental wounds. "For cases of compound fracture seen for the first time several hours after the accident I have of late used a still stronger antiseptic in the form of one part of carbolic acid dissolved in five parts of spirit of wine, introduced into the recesses of the wound by means of a gum-elastic catheter connected with a syringe by a piece of caoutchouc-tube. In this way the antiseptic is made to penetrate the coagula in the various parts of the wound more effectually than it be could by forcing it in through the external orifice, while at the same time we avoid the needless disturbance which this procedure may entail in consequence of the irritating liquid being driven for a greater or less distance through the cellular interstices of uninjured parts."]

A solution of carbolic acid of the strength of 1 to 40 is that which I would advise for providing an antiseptic atmosphere in the form of spray when the particles of the liquid are dispersed by means of air impelled by hand-bellows or a condensing pump. But I have of late found it more convenient to use high-pressure steam as the motive power, on the principle of Siegle's steam inhaler, the apparatus, modified to adapt it for our purpose, being both self-acting and self-directing, so as to dispense with the services of an assistant. But in this case the water of the condensed steam dilutes the solution with which it becomes blended in forming the spray, so that it is needful to use a larger proportion of the acid. In the machines hitherto constructed one part of water is consumed by ebullition for three parts of solution sucked up to mingle with it, and thus 1 to 30 is the proper proportion of the acid in order to form a 1 to 40 spray.

(Different steam spray-producers may differ in this respect in consequence of slight variations in the relative sizes of the orifices for emitting the steam and lotion respectively. It is therefore right that in every case the actual proportion between the steam and solution consumed should be ascertained by the maker, and stated to the surgeon. In absence of such information the surgeon can readily settle the point for himself by working the spray for a while with given quantities of water in the boiler and lotion in the bottle, and then measuring the amount remaining in each vessel.)

As a dressing for excluding putrefactive fermentation from wounds, the antiseptic gauze, which contains in its fibres carbolic acid stored up in common resin, which is of course insoluble in the discharges and holds the acid with great tenacity, has continued to prove thoroughly trustworthy if properly used; so that, provided always we have the essential condition of a sufficient space of skin in every direction from the wound for the gauze to cover, we may be quite sure that a wound left free from the causes of putrefaction when dressed, will be found similarly aseptic when we change the dressing—a fact which no one, perhaps, who has not gone through the labours and anxieties which have fallen to my lot in striving after its attainment can fully appreciate. Under ordinary circumstances we still use the gauze in eight layers, with a sheet of some trustworthy impermeable tissue placed beneath the outmost layer to prevent the discharge from soaking directly through the dressing, for if it did so a copious effusion might wash out the antiseptic from the part immediately over the wound and putrefy within twenty-four hours. The most durable and therefore most reliable material for the purpose, consistent with the requisite lightness, is a fine cotton cloth with a thin layer of caoutchouc on one side, known in the shops as hat lining or thinnest mackintosh. This, if of good quality, may be used for the same case for weeks together. But, unless particular care is taken with its manufacture, the caoutchouc layer tends to adhere in the folds which it acquires from the various altered positions of the dressing, and portions of it may then be torn off when the folds are straightened out, thus destroying the essential property of impermeability; and if the mackintosh be still used in that condition, entire failure of the dressing may result.

I have just now under my care a case in which I opened antiseptically an abscess connected with disease of the hip-joint, where all went on typically for a considerable time, the discharge being merely serous, and so diminished in quantity that the dressing was left unchanged for several days together, when, in consequence of imperfection of the mackintosh, the discharge was observed to have soaked directly through the dressing opposite the wound, and, apparently as a result of this, putrefaction had crept in, which soon led to profuse suppuration and hectic, necessitating excision of the hip-joint.

It is therefore needful to have this material specially prepared to obviate the tendency to adhesiveness. And in all cases a second piece of the mackintosh should be at hand, so that when one piece is observed to become impaired by wearing, the other may be substituted for it.

The mackintosh having no antiseptic property except mechanically by its impermeability, but, on the contrary, being, like other indifferent materials, covered more or less with septic matter, it is necessary, when the dressing is a compound one, or in other words consists of more pieces than one, that the mackintosh be well covered in at the place of junction of the two pieces, for if it were allowed to project uncovered in the vicinity of the wound, it might communicate septic mischief.

As an example of a compound dressing may be given one which, from the frequency of the cases requiring it, is the most important of all—viz., that used after removing the mamma. It consists of two pieces of folded gauze and mackintosh, a posterior and an anterior one. The posterior portion is about half a yard square, and reaches vertically from above the acromion to a little below the elbow, and transversely from the spine to the arm, which it envelopes as it lies beside the chest, thus forming a complete antiseptic basis for the region of the shoulder, and effectually guarding against what would otherwise be most difficult to avoid, the extension of putrefaction from the bedding through the axilla into the outer angle of the wound. The anterior dressing, though not so broad as the posterior one, is of about equal length, so that when applied to the chest it may reach from some inches beyond the anterior angle of the wound to the posterior dressing, which it joins below the back of the axilla; and here it is that it is needful to have the mackintosh well covered in among the folds of the gauze. The infra-axillary region being the part where the chief discharge occurs, it is of the utmost importance that the outer part of the anterior dressing be maintained well in apposition with the skin, and this is ensured by stuffing a substantial mass of gauze irregularly packed together between the patient's side covered by the dressing and the lower part of the arm. This additional mass of gauze has the further advantages that it serves as a supplementary antiseptic material to absorb the discharge, and that it prevents the arm from being closely pressed to the side—a position which, besides being irksome to the patient, would entail the serious evil of interference with free drainage from the outer angle of the wound. In order to prevent the occurrence of bedsore over the external condyle a wisp of gauze, twisted and rolled together in the form of a ring, is placed beneath the elbow so as to receive the bony prominence in its hollow. The whole dressing is secured in position by suitable turns of a gauze bandage, which is extremely convenient on account of its lightness, and also from the circumstance that the slight adhesiveness of the material with which it is charged checks the tendency of one turn to slip upon another, so that it is more secure than a common cotton roller, besides the advantage that it increases the antiseptic efficacy of the dressing. But, on account of its loose texture, it cannot be properly fixed by ordinary pins, which would be liable to shift their position in it. Those called safety-pins, made on the principle of a brooch, should therefore always be employed; for there are cases in which the slipping of a single pin might, by allowing the dressing to shift its place, endanger the life of a patient.

There is another point in the use of the gauze to which I wish to direct special attention. The very quality which makes this material so valuable as a permanent antiseptic dressing, and renders it both mild and persistent in its effects—namely, the tenacity with which the resin in its fibres holds the carbolic acid—may become a source of serious danger at the time of application. For at ordinary temperatures of the air the antiseptic is given off by the gauze in such extremely small amount that particles of dust falling upon it cannot be expected to be deprived of septic energy by contact with it, as they are by a 1 to 40 watery solution. Hence, if a piece of gauze is applied dry to a wound communicating with a cavity containing blood, serum, or pus, as in a compound fracture, a stump after amputation, or an abscess, portions of septic material on the surface of the gauze may become mingled with the discharge at the outlet, and, thus shielded from the subsequent action of the carbolic acid, may spread fermentation into the interior. Had it not been for the use of the spray, which plays on the under surface of the gauze when applied, I cannot doubt that this cause would often have led to failure. But considering the very short time during which the spray often acts on the gauze, it is plain that it would be imprudent to trust to it for purifying the surface. This, however, can be done with the utmost readiness, either by wetting with the 1 to 40 lotion the part of the gauze dressing which is to go next to the wound, or, what is commonly more convenient, by applying to the wound itself a separate piece of gauze soaked in the lotion, and over this the dry gauze in its eight layers. When the discharge is slight, a single layer of this moist loose gauze is sufficient, but if it is copious the wetted portion must be substantial.

In situations where there is not as much extent of skin for the gauze to overlap as is desirable—for example, in the vicinity of the pubes, as after herniotomy—the deficiency of surface of the dressing may be compensated by using the gauze in a thicker mass; say in sixteen or thirty-two layers. By this means such wounds may be securely kept from putrefaction, which with only eight layers it might be impossible to avoid.

Details like these, tedious as they are to describe, are of course very easy of execution, and attention to them will, I doubt not, be rewarded, in the hands of others as it has been in my own, by a constancy of results which leaves little if anything to be desired.

With regard to the times of changing the dressing, it is, as a general rule, prudent to inspect the wound the day after its infliction, whether it be accidental or the result of operation. But during the subsequent progress of the case the gauze may be left undisturbed for periods varying from two days to a week, in proportion to the diminution of effusion; the general rule being that the dressing should be changed on any day on which the discharge is observed to have extended beyond the edge of the folded gauze so as to make a stain upon the clothes or bedding.

Invaluable as the gauze is, I greatly regret to find that its use is restricted by the high price at which it is often sold. I will, therefore, now describe the manner in which it has been prepared for a long time past at the Royal Infirmary of Edinburgh, with the effect of reducing by more than half the wholesale price previously paid by the institution. First I may remark that the chief element in the cost is the cotton cloth, the expense of the materials with which it is charged being less than a farthing per square yard of the gauze. It is therefore of great importance to obtain the muslin as cheap as possible from the manufacturer, and a little saving is effected by having it unbleached. (Messrs. Lang and Cousin, 42, Ingram Street, Glasgow, supply the unprepared gauze at the wholesale price of 1½*d.* per yard.) The materials used for charging the gauze are—1 part of chrystallised carbolic acid, 5 parts of common resin, and 7 parts of solid paraffin; the last ingredient being used for the purpose of preventing undue adhesiveness. Paraffin has this advantage compared with any other substance of similar consistence with which I am acquainted, that it does not blend at all with carbolic acid in the cold, and therefore simply dilutes the mixture of acid and resin, without interfering in the least with the tenacity with which the resin holds the acid. If, for example, we compare it with a substance like spermaceti, we find that a mixture of 1 part of the acid with 5 parts of resin and 5 parts of spermaceti is really much more pungent to the tongue than the 5 parts of resin and one of acid alone. For although the former mixture contains only half the quantity of the acid, yet the spermaceti, blending with the acid like the resin, but holding it less firmly, takes the acid from the mixture and gives it up to surrounding objects. Such a mixture of resin, spermaceti, and carbolic acid, therefore, though admirable in consistence, would be both less mild and less permanent in action than the resin and acid alone. The addition of paraffin, on the other hand, has no other effect on the mixture than to render it somewhat more mild. It seems needful to point out this circumstance, because from want of knowledge of it, modifications of the gauze have been suggested in which the paraffin has been replaced by other materials, which cannot fail to be disadvantageous.

In order to charge the gauze, the paraffin and resin are first melted together in a water bath, after which the acid is added and blended by stirring. The object now is to diffuse this melted mixture equably through the cotton cloth, and for this purpose two things are requisite—viz., that the cotton be at a higher temperature than the melting point of the mixture, and that it be subjected to moderate pressure after receiving it. The cotton cloth, a yard wide, is cut into six-yard lengths, and these, having been folded so as to be half a yard square, are placed in a dry hot chamber formed of two tin boxes placed one within the other, with an interval to receive water, which is kept boiling by fire or gas beneath, the upper edges of the boxes being connected and provided with an exit pipe for the steam. There is also a glass tube arranged as a gauge of the amount of the water, and the chamber has a properly fitting lid. The bottom of the chamber is strengthened with an iron plate, to enable it to bear the weight used for compressing the gauze when charged. This is a piece of wood, about two inches thick, nearly fitting the chamber, covered with sheet lead, so as to make it about as heavy as a man can lift by means of two handles in the upper surface. The weight is heated along with the cotton, and is put first into the chamber so as to leave the cotton loose for the penetration of the heat, which occupies two or three hours. The cotton, when heated, is taken out of the chamber along with the weight, and placed in a wooden box, to protect it from the cold. (It would be better to have a second hot chamber for this purpose, since in cold weather the cotton is apt to be too much cooled in spite of the protection of the wooden box.) The heated gauze is then at once charged with the melted mixture of carbolic acid, resin, and paraffin, in quantity equal to the weight of the cotton fabric (or slightly less), and, in order to diffuse the liquid as equably as possible, it is sprinkled over the gauze by means of a syringe with a number of minute perforations in its extremity, the body of the syringe and the piston-rod having each a wooden handle to protect the hands of the workman from the heat. The syringe is constructed to hold half the quantity of the mixture required for charging one piece of cloth. One folded piece being placed at the bottom of the hot chamber, its upper half is raised and turned aside, and one syringeful is sprinkled over the lower half. The upper half is then put back into position and another syringeful thrown on. The same process is repeated with all the other pieces of gauze, after which the weight is put into the chamber to compress the charged cotton, and the lid applied. An hour or two are then allowed to elapse to permit the complete diffusion of the liquid, when the material is fit for use.

The apparatus above described can be constructed by a common tinman for about £10; and it is estimated that the entire cost of the gauze to the Edinburgh Infirmary, including the price of materials and manufacture, is somewhat less than 2*d.* per square yard. For hospital purposes this expense is further reduced by the fact that the gauze, after being used for dressing a case, can be entirely cleansed of the substances with which it was charged by washing in boiling water, care being taken to press it well in the hot water with a suitable wooden implement. The cotton cloth is then even better adapted for the purpose than it originally was, having lost the slight rigidity caused by the starch or gum used to stiffen the threads before weaving. Thus the same piece of cotton may be used over and over again, with saving to the institution of the chief cost of the material, which, as before said, is that of the cotton. Practically, however, it is only larger dressings which will repay the trouble of washing and arranging in proper masses for recharging.

Solution of carbolic acid in the fixed oils, which, as regards the tenacity with which they hold the acid, occupy an intermediate place between the watery solutions and the resinous mixture in the gauze, has been for the most part superseded by these latter; a watery solution being more efficient as well as more cleanly for a detergent lotion, while the resinous mixture is more mild and more persistent, and therefore better adapted for a permanent dressing. There are some circumstances in which the oily solutions are valuable. For lubricating instruments introduced into the bladder, such as catheters, bougies, sounds, or lithotrites, I have for some time past used a solution of one part of carbolic acid in twenty parts of olive oil—a proportion which, while unirritating to the urethra, is trustworthy as an antiseptic; and there can be no doubt that the avoidance of putrefactive fermentation within the bladder is in many cases a matter of vital importance. In using a catheter, the interior of which cannot be kept clean, but must have more or less of foreign material encrusted upon it, some of which might by chance enter the bladder from the regurgitation, the instrument should either be kept for several minutes with the carbolic oil within it before it is passed, or, what is more efficient and saves time, it may be washed out with the 1 to 20 watery solution before being smeared with the oil. Washing urethral instruments with such a lotion will probably have the further important advantage of securing us against the conveyance of specific virus from one patient to another by their means. For a protracted experimental investigation into the subject of putrefaction and other fermentative changes having proved to me the perfect efficiency of the 1 to 20 watery solution of carbolic acid in destroying minute organisms of a fungoid or bacteric nature, I feel that we can hardly be wrong in assuming its destructive effect upon the viruses alluded to, which, though not proved to be organisms, analogy leads us to regard as in all probability of such a nature. If this be so, the use of such a lotion and lubricating oil for specula and other articles used in female complaints will prevent in the other sex the lamentable results which have now and then occurred from instrumental infection.

Cases from time to time arise in which it is desirable to have an antiseptic in constant active operation on the interior of a wound, necessitating the frequent renewal of the dressing; and for this purpose a solution of carbolic acid in about ten parts of olive oil answers well. As an example of its use in this way, I may mention a practice which I have adopted of late years in caries limited to the middle or anterior part of the tarsus and accompanied by sinuses. Cutting right across the soft parts of the dorsum of the foot, including the tendons, vessels, and nerve, I open the tarsus completely from side to side at the diseased part, when, the foot being bent upon the sole as upon a hinge, the carious portions are exposed with perfect freedom for inspection and operation, and all bones or portions of bones that appear suspicious are removed, the procedure being rendered much more precise and satisfactory by the bloodless method of operating which I have for many years pursued—viz., emptying the limb of blood by raising the foot to the utmost for a few minutes and then applying a tourniquet as rapidly as possible and so tightly as to prevent any circulation in it. The vessels having been secured, it remains to dress the wound. If this were done in such a way as to permit unchecked putrefaction in it, there would be great risk of serious disturbance from the extension of putrefactive suppuration into the tarsal joints opened in the operation. On the other hand, as the sinuses communicating with the wound already contain putrescent materials, it would be useless to operate under the spray and apply an external gauze dressing. What is needed is something that shall prevent the putrefaction from spreading from the points where it may exist to the rest of the wound. This object is attained by first washing the cut surface with the solution of chloride of zinc, 40 grs. to 1 oz. of water—a practice of the utmost value in all cases where, in consequence of the presence of sinuses or the situation of the part, as the mouth or perineum, it is impossible to exclude causes of putrefaction from the wound. When sinuses are present, I formerly advised their injection with solution of the chloride by means of a syringe before the commencement of the operation. But though this is undoubtedly the most efficient mode of introducing the liquid into the recesses of the sinuses, I have ound that the force with which the solution is driven in by the syringe may cause it to burst through the pyogenic membrane of the sinuses and become effused into the cellular tissue. This accident, in two instances (one of caries of the wrist and one of amputation through the condyles of the femur) led to extensive loss of vitality of the integument, and hence for the last three years I have contented myself with injecting the sinuses at the conclusion of the operation, when, the sinuses being freely open at the wound, the risk referred to no longer exists.

Chloride of zinc, I may remind the reader, has this remarkable peculiarity among all antiseptics that I have tried, that a single application of it to a recent wound in a solution of the strength above mentioned, though it produces no visible slough, yet prevents the occurrence of putrefaction in the cut surface for days together, in spite of the access of septic material; and if the discharges have opportunity to flow freely away, as after the removal of a tumour of one of the jaws or a portion of the tongue, there may be absolutely no odour from first to last, the divided textures being thus guarded from the bad effects of putrefaction during the dangerous period before they have been covered by the protecting layer of granulations.

But in the wound of the foot which we are considering, if any permanent dressings were employed, the blood and serum effused in the early periods of the case, and accumulating more or less in the interior, would not be prevented from putrefying by the chloride on the cut surface. And it is only in rare cases that the injection of the sinuses with the chloride has the effect of eradicating all putrefaction from them. This is a thing to be aimed at, but hardly expected. In order, therefore, to avoid the extension of putrefaction from any septic point in the wound, the antiseptic dressing must be frequently changed; and this is conveniently done with pieces of lint dipped in the oily solution of carbolic acid (1 to 10), the oil preventing the lint from sticking in the wound, so that it can be readily removed. In order to admit of the free application of this dressing to all parts of the cut surface, the wound is made to gape freely by depressing the toes along with the foot-piece of the M'Intyre splint on which the limb rests. The oiled lint is renewed every three hours day and night during the first twenty-four hours, and after this the interval is gradually increased as discharge diminishes, till after three or four days one dressing per diem is sufficient. The free exposure of the wound has this further important advantage, that it permits the surgeon to examine the surface with the finger from time to time in order to ascertain when the bones are entirely covered with soft granulations ; for then and not till then can he be sure that the bones are perfectly sound, and as soon as this is the case the foot-piece is adjusted at right angles with the leg, so as to permit the granulating surfaces to coalesce and the wound to heal. In all the five cases in which I have hitherto had occasion to employ this treatment, the immediate object was completely attained, the foot remaining quite free from inflammation, and the constitution without febrile disturbance. Two of the cases are still under treatment, not yet completely cicatrised. Of the other three feet operated on in this way, two are useful and strong, though more or less shortened. The other, after being a perfectly serviceable foot for several months, became the subject of relapse, requiring amputation at the ankle. The practice was suggested to me by the remarkably satisfactory results of antiseptic treatment in a case of wound by a circular saw which divided the soft parts completely at the instep, laying the ankle-joint freely open. The patient not only recovered with a freely movable ankle-joint, but, except a line of cicatrix across the instep, there was nothing abnormal in either the appearance or actions of the foot. And it is somewhat remarkable that, in the cases of disease, where the wound has been left gaping for weeks, not only has the power of extension of the toes been restored, but sensation has been recovered in the parts supplied by the divided nerve.

As another example of the usefulness of the oiled lint may be mentioned abscess beside the rectum, where the vicinity of the anus renders a permanent gauze dressing inapplicable. The skin having been washed with 1 to 20 watery solution of carbolic acid, the abscess is opened under the spray where it points, and a pad of lint soaked with 1 to 10 carbolic oil is applied and retained by a T bandage, and changed every five or six hours. Before defecation, the patient draws the bandage and pad towards the side where the wound is, so as to keep the latter covered while exposing the anal outlet, which is carefully cleansed with a piece of lint dipped in the antiseptic oil before the pad is readjusted. The oil, penetrating among the folds of the skin, is more efficient for this situation than the gauze would be, even were it frequently changed. After two or three days have passed, the strength of the oil may be reduced to 1 to 20, if the stronger proportion causes irritation. I have treated several cases in this way both in hospital and in private practice, and in every instance the occurrence of fistula has been avoided, although in some of them it was ascertained, by digital examination of the rectum before opening the abscess, that pus was present in the submucous tissue —a state of things which, I believe, inevitably leads to fistula if the abscess is treated in the ordinary way. Of course scrupulous care on the part of the patient is essential to success, but this I have not found wanting, even in hospital cases, when it is clearly explained that fistula will be prevented by the requisite pains.

It is an interesting fact, pathologically, that the progress has been equally satisfactory when the pus has been fetid on evacuation as when it was odourless, the discharge being a mere serous oozing after the escape of the original contents. This seems to imply that the cause of the fetor was not any organic (bacteric) ferment, but a peculiarity in the action of the part. For had septic organisms been present before the abscess was opened, they would have continued to propagate in it in spite of the antiseptic treatment; and the result would have been the same as under poultice or water dressing, or, what comes to the same thing, under an antiseptic dressing, carelessly employed. For it is hardly needful to point out that neither the spray nor the carbolic oil applied externally, nor the oiled lint inserted in the outlet to serve as a drain, could correct putrefactive fermentation once established in the abscess cavity. Here as in the antiseptic treatment generally, the means used are calculated to prevent, not to correct putrefaction.—*Lancet*, *March* 13 *and* 20, 1875, *pp.* 365, 401.

41.—ON THE USE OF DRAINAGE-TUBES IN THE TREATMENT OF ABSCESSES.

By Joseph Lister, Esq., F.R.S., Professor of Clinical Surgery in the University of Edinburgh.

In the case of abscess beside the rectum a bit of lint soaked with carbolic oil is used for a drain, simply because in this situation it is not easy to keep in position a caoutchouc drainage-tube, which, under ordinary circumstances, is greatly to be preferred, since it does not at all obstruct the flow of discharge, and may be carried to any depth that is desired, and can be removed and reintroduced without difficulty. Hence a drainage-tube of comparatively small size introduced through a mere puncture in the skin, or through a small interval between stitches, is more efficient than a free incision or a widely gaping wound without the use of a tube. The tubes should vary in size in proportion to the quantity of discharge anticipated, from the thickness of a crow-quill to that of the little finger, and the holes in them should have a diameter about half that of the tube. The outer end of the tube should be on a level with the skin, and it is conveniently maintained in this position by means of two pieces of silk passed with a needle through two opposite points of the edge of the tube, the ends of each thread being knotted at a distance of one or two inches from the tube. These knotted threads being placed straight upon the skin, one at each side, the knots exert friction upon the dressing bound down upon them, and prevent the tube from being pushed in, while the dressing itself keeps it from protruding, so that the orifice lies flush with the integument. When the tube has to be placed obliquely, its outer end must be cut oliquely in proportion, otherwise it is apt to become partially buried and blocked up.

Another cause may lead to partial obstruction in chronic cases, such as spinal abscess—viz., the projection of fungoid masses of granulations through the holes in the tube so as to interfere with its calibre, and at the same time cause difficulty in extracting and reintroducing it. But this inconvenience is got over by having the holes restricted to the vicinity of the deeper end of the tube: for it seems to be chiefly at and near the integument that the granulations have this tendency to fungate; and in cases of this kind it is only at the deeper part of the tube that holes are required.

In recent wounds I used to think it needful to take out the tubes on the day after operation or accident to clear them of clotted blood. But I find this is wholly unnecessary, the shrinking of the clot apparently preventing it from interfering with the exit of discharge, so that a tube introduced at the time of an operation may be left in for three or four days, by which time the tissues around it will have been consolidated by organising blood or lymph into a smooth channel, into which the tube can be readily re-inserted, which is by no means always the case if it is taken out the day after operation.

In large and deep wounds, where very free drainage is required, it is convenient instead of using one tube of very large calibre, to insert several of smaller size side by side. These, while quite as efficient as a single large one, do not separate the edges of the wound so much, and they can be afterwards withdrawn one after another as the discharge becomes reduced.

It is impossible to exaggerate the importance of drainage-tubes. In abscesses they must be employed till the cavity is completely closed; and in wounds not only are they invaluable during the first twenty-four hours, when the irritation caused by the action of the antiseptic on the tissues during an operation renders the flow of bloody serum more free than it would be without antiseptic management; but when the wound is of any considerable depth they should be used so long as even trifling serous oozing continues. For if the outlet proves insufficient for the free escape of the plasma still effused into the interior, the fluid, accumulating in the cavity, gives rise to tension, and hence to inflammatory disturbance, which may lead to suppuration and more or less opening up of the wound.—*Lancet, March* 27, 1875, *p.* 434.

ORGANS OF CIRCULATION.

42.—WOUND OF THE INTERNAL CIRCUMFLEX ARTERY IMMEDIATELY AFTER ITS ORIGIN FROM THE PROFUNDA FEMORIS; PROFUSE BLEEDING, TREATED SUCCESSFULLY BY PRESSURE AT THE WOUND, CONJOINTLY WITH COMPRESSION OF THE FEMORAL ARTERY.

By Richard J. Butcher, Esq., M.R.I.A., M.D., Surgeon to Sir Patrick Dun's Hospital, Dublin.

Richard B., aged twenty-four years, a tall, well-developed man, was admitted to Sir Patrick Dun's Hospital, August 18th, 1872, at one o'clock a.m. He had been in a struggle, and was struck with a knife, and bled freely before admission. On being stripped, there was discovered a wound, with clean cut edges an inch in length, in the right groin, slightly inclined to the femoral artery, and about two inches below Poupart's ligament, and at right angles to the axis of the limb, the external edge of the wound being not an eighth of an inch from the internal wall of the vessel. The man's trousers, boots, and stockings were saturated with blood, and on his admission (about ten minutes after the accident) blood was continuing to flow, and appeared to well-up from the bottom of the wound, and was of a bright colour. The man was immediately placed in a bed in the horizontal position, and the hemorrhage was arrested almost immediately in his weakened state by pressure being applied over the wound by compress and bandage. His clothes being removed, the entire limb was bandaged from the toes up to the groin, and steadily over the wound, by a few additional turns and also additional pads. The leg was then raised to a considerable height on a plane of pillows. A large draught of opium was given. After a few moments he slept quietly. Towards morning he complained of acute pain in the groin. A large opiate was administered, which lulled the suffering. At 10 a.m., August 19th, as the dressings were bloody from a fresh flow, I removed all of them, and drew the edges of the wound steadily and gently together with adhesive straps, reapplied the pressure by compressors over the wound, and steadily bandaging from the toes up. Pulse bounding and very unsteady. Great restlessness. Ordered a full opiate, to be repeated every fourth hour. Limb considerably elevated on pillows. Pulse, 128; temperature, 99; perspiring freely.

September 3rd. Woke up at 6 a.m., to stop hemorrhage from the wound; the patient was awake when it occurred, and he stopped it with the pressure of a padded key, which was left beside him for the purpose until aid was procured. The amount of blood lost was about six ounces, suddenly, of a bright scarlet colour. The leg and thigh were re-bandaged; a four pound weight was placed over compressors resting on the wound and above it, limiting the supply not only to the wound, but prohibiting its course immediately above it. At this time the hemorrhagic tendency was up; the digitalis mixture was again had recourse to, and ice to allay the patient's thirst. I visited the patient again in the evening, and as there was some discoloration of the dressings by blood, I removed everything. The surface of the wound seemed anything but healthy. I washed its surface over with a 20 gr. solution of nitrate of silver. I rolled the limb carefully from the toes upwards to above the wound, having dressed it with mild ointment, and applied suitable compresses upon it sufficient to control any bleeding from the lower end of the vessel. I next brought direct pressure to bear on the femoral artery just as it passed off the pubis by the compressor, which I have used successfully in aneurism before now. The current was very nearly altogether obstructed in the main trunk, and so the weight of the column of blood was removed from the wound, and the upper end controlled. The limb was supported on pillows, and elevated as before. I depended then for the supply of blood to the limb from the numerous anastomoses which surround the hip on all sides. The constitutional treatment continued as before.

[There was no return of the bleeding, but recovery did not go on without further drawbacks.]

There are two great surgical problems worked out in the history of this case. First, the management of the large wounded artery deep in the thigh, just within the line of the femoral vessel, refusing to be healed up by the general pressure applied to the limb, and directly to the wound, favoured by position; yet by the addition of compression on the main trunk, above the wound, all further flow was prevented, the artery became sealed up, and the wound healed.

Every practical surgeon knows the difficulties to be encountered in attempting to secure the cut ends of a divided artery in a deep, narrow wound, the very dilatation of the wound endangering other vessels, and increasing difficulties, more particularly when the injury lies close to a large trunk, and in the vicinity of where numerous vessels pass from it, and where important nerves are situated. No surgeon will hesitate about the propriety of tying both ends of a divided artery when it can be readily got at, and when the anatomical relations to it can be defined; but when a knife has been thrust deep into a limb in the proximity of large vessels, and when blood wells up rapidly, showing that some considerable-sized artery has been cut, I would warn the surgeon to pause before he dilates the wound, and would suggest a trial of the treatment which I have advocated in the foregoing pages. In my work on "Operative Surgery" I have given many instances where wounded arteries were cut down upon under great difficulties, and tied successfully, yet in cases such as I have now described I think the line of treatment applied to it the most scientific, and likely to ensure success. I would strongly recommend the same mode of practice in cases of secondary hemorrhage after amputation—I have several times employed it, and with the happiest results. The following case affords a good illustration of its efficacy and benefit:— On the 12th November I amputated the thigh. The case was a very urgent one, and I wanted not to lose a tablespoonful of blood. I performed in this instance the circular method. The patient was under chloroform; I swept the knife rapidly round and turned up the skin; I cut through the muscles partly obliquely, and divided all round the periosteum; all retracted, the bone was sawn; the main artery was carefully ligatured, and the minor vessels quickly tied, so great was the vascularity from long continuance of disease of the knee-joint; a ligature was placed around the leg, just before the incisions, so as to prevent any regurgitant flow from below; the wound was rapidly dressed, and the patient woke quietly from her sleep under chloroform, and was not aware that the operation had been performed. Some time after startings of the limb of the most terrific character set in, which were only quieted by very large and repeated doses of opium; it is reported that on the 13th, the 14th, and 15th, nothing could be more violent than the jerking of the stump, though fastened upon a pillow; yet it, too, was lifted up almost vertically. At this time the patient was taking, and had been taking, sixty drops of Battley's sedative every third hour, day and night. On the 16th I dressed the wound, the patient being placed under the influence of chloroform by Dr. Bennett. Report given on to-day.—The wound looks very healthy; no tension; a large portion is united; spasms so violent that I injected into the thigh, near the groin, some of the following preparation of morphia:—℞ Aquæ distill. ʒ j; acid acet., gutt. v.; acetatis morph., gr. 5. M. With a very fine syringe I injected under the skin eight minims of this fluid, according to the minim scale marked upon it. As I have observed frequently in other cases after its injection, so likewise in this instance, a little nausea followed, which was evidenced in seven minutes; the acute pain was subdued, and the spasms moderated. This treatment had frequently to be resorted to, as well as the internal administration of large doses of Battley and abundant stimulants, with most nutritious broths, &c., until the 20th, when there was rapid secondary arterial hemorrhage, which most fortunately occurred when I was in the room. While talking to the patient she suddenly exclaimed, "There is something warm and wet about my limb." On throwing down the clothes a large quantity of fluid arterial blood was visible. I at once compressed the femoral artery at the groin, and arrested its flow, and having procured assistance, elevated the stump, and fastened a nine pound weight over the artery, taking the place of my fingers. The weight was tightly bound down with considerable force by a bandage passed round the thigh and loins in a figure-of-8 form. All the constitutional evidences of an hemorrhagic tendency were present—a bounding rapid pulse, great anxiety and restlessness, flushed face, brilliant eyes, severe pain in the stump, with violent spasms and rapid jerkings. In addition to the weight over the femoral artery, I at once screwed down gently the tourniquet, to support its effect. The stump was raised upon a pillow, almost vertically, and its surface covered with ice; large doses of opium administered. By this means the bleeding was controlled, and soon the patient began to doze. I remained with the patient for several hours, until all danger of recurrence had passed away; ordered full opiates every third hour. Nov. 21st, 7 a.m.—A very good report; no return of bleeding; pulse good, and had taken freely of nutriment and wine, as directed, and several draughts of opium. At 12 again visited.—Doing well; sleeping quietly. At 1 o'clock I was sent for, as there was some slight bleeding. On my arrival found the patient excited, tossing about, and, in fact, very restless, with the hemorrhagic tendency strongly marked, and some arterial weeping from the wound, though additional pressure had been put on at the groin. I endeavoured by more suitably applied pressure to control the vessel at the groin, and did so as long as it was kept up, but this could not be relied on except temporarily, so that at 5 o'clock p.m. removed everything from the surface of the wound, elevated the stump at right angles with the trunk, applied the arterial (aneurism) compressor at the groin steadily upon the vessel, and then supported the stump with pads and wide straps of adhesive plaster, thus making gentle pressure all over its surface, and then sustained the entire in this elevated position by several small pads, and a pillow beneath it; a bladder containing ice was then allowed to rest upon the face of the stump, its chief weight being borne by the pillow, above and beyond its surface, and a full opiate and forty drops of Battley to be continued every fourth hour.

April 22nd. Had a quiet night, and slept a good deal; took a pint and a half of strong chicken jelly and beef-tea, five glasses of wine, and brandy at intervals.

On the 23rd. No throbbing or hemorrhagic tendency; has taken nearly two quarts of beef-tea and chicken jelly, four glasses of sherry and four of claret, besides brandy; stump cool; pressure of aneurismal clamp most effectual, never moved; no distress or complaint about its pressure, therefore no meddling with it; to continue the Battley, fifty drops every fourth hour, which repeated doses are all essential towards controlling the spasms, which seem ever vigilant to come on.

This morning visited the patient at half-past seven, being restless during the early part of the night, and having had altogether only two hours' sleep, owing, as she says, to the pressure of the compressor. Re-adjusted the compressor higher up, and dressed the wound, which looks very healthy; cut out all the stitches, and though the stump has been sustained in the erect position for such a length of time, the flaps are well united in front with plenty of material, not the slightest drooping backwards, owing to the manner in which the bandage acted, steadying the parts forward, and assisted by the pillows supporting them from behind and below up to the front of the stump; then, when all the dressings were complete, placed the pad of the compressor on the artery, over the pubis, with moderate force sufficient to control its current, the ball and pad being directed slightly upwards; the skin over the vessel which had been first pressed upon was quite red and blistered; the use of the ice was now stopped; to continue nutriment, stimulants, and opiates as freely and as frequently as before; no less under the many distressing influences would sustain life.

On the 28th the condition of the parts was most satisfactory. All dressings being removed, several ligatures came away; the one on the main artery and some others remained unmoved. There was very little discharge, and the deep parts of the wound well consolidated. The parts being well sustained from behind forwards, both by pads and plaster, a bandage was applied from above downwards, so as to prevent retraction or dragging on the recently healed edges. The stump was then fixed on pillows at the same high angle, and steadied by a few turns of a bandage pinned to the bed on either side. I then made an assistant make pressure on the artery above the aneurism compressor at the pubis, and, after resting a few moments, I took all pressure off the artery. The artery seemed to be occluded at the site of the pressure, for no pulsation could be felt. The assistant kept digital compression over the trunk at the pubis for fully ten minutes ; on its being removed the patient felt no heave or impulse at the part, indeed, she distinctly stated that "the throbbing at the instrument ceased two days before." From the condition of the parts and the patient's feelings, Dr. Bennett and myself considered that the femoral artery was occluded ; there was not the slightest tinge of blood during the dressing. From this period up to the healing of the wound and the patient's perfect recovery, there was no return of bleeding.

In the case just related the patient was so shockingly reduced from long-continued illness before this operation, and the loss of blood which she sustained by the secondary gush, that the least additional flow, produced by any effort to secure the vessel in the stump, or by cutting operation higher up, would, I am perfectly convinced, have caused her death. The patient's life was saved by the conservative measure—*the immediate application of pressure on the main trunk*, so that not a drop of blood was lost after—conjointly with the enormous amount of stimulants, nutriment, and sedatives so abundantly supplied throughout the after progress of the case.

The second important problem established in Bell's case is the propriety of immediately opening all formations of matter occurring after primary injury, whether located within or without the joints. The following case is interesting, as corroborative of the practice. A tradesman, aged 46, applied to me in October last, having received a deep punctured wound in the palm of the hand from a bradawl. He paid but little attention to it for a time. However, at the end of ten days the palm became exceedingly painful, hard and tense, while the dorsum of the hand was enormously swollen, and of a livid red colour ; fever of the inflammatory character of the very highest type ushered in these symptoms. Together with this most serious condition of the hand, the lower end of the forearm was swollen and very tense, evidently showing that the mischief had extended so far also. I carefully incised the palmar fascia in two positions, having made a small wound over the metacarpophalangeal articulation of the index finger through the integuments and superficial bands of fascia. I passed up a director, slightly bent its concavity forwards, and divided fully the fascia so high as the muscles of the thumb ; and, in a like manner, introduced the director through a wound similarly situated over the base of the ring finger, carrying the incision nearly up to the annular ligament. A large quantity of matter escaped by both wounds, and very little blood from the manner in which the director lifted forwards the fascia to the security of the palmar arches behind ; so tense were the parts that the wound gaped considerably. In spite of these free incisions, the perfect relief of tension, the unloading of vessels, and the discharge of pus, still, from the broken down constitution and habits of the man, the inflammation progressed up the limb, assuming the "diffuse" character. Two incisions were made parallel to and very near the brachial artery, one above the elbow-joint, and the second near the axilla, from both of which imperfect pus escaped. During all this time the patient was most liberally supplied with stimulants, nutritious broths, and eggs, &c., repeated large doses of opium, somewhat after the same manner as followed out in Bell's case. After the inflammation seemed checked in its upward course at the axilla, the elbow-joint of the affected limb was attacked, occasioning the most excruciating pain, over which was applied a thick paste of watery extract of opium and belladonna ; this covered over with warm stupe cloths, alleviated to a certain extent the intense suffering. In four-and-twenty hours after the inflammation and pain set in, it was quite clear that matter was poured out into the joint ; there was considerable prominence, tension, and deep fluctuation over the front and inside of the joint ; rigors were incessant, and the patient was bathed in sweat. I laid open the joint freely on its inner side, taking the internal border of the olecranon process as a direct guide to the part; pus was let out to at least a wine-glassful; there was very little weeping of blood after the first discharge, and the edges of the wound flew wide apart, so completely was the tension relieved; a full stimulant and opiate were administered, and, after an hour's time, the patient fell into a quiet sleep, from which he awoke free from pain. It is not necessary to pursue the case further, as, after this period, there was a total arrest of the inflammation of the soft parts by the free incisions which had been made, as well as a healing process set up in the joint after the matter was evacuated. Though the motions of the fingers and hand, as well as the elbow-joint, were stiffened and crippled for some time, yet the man eventually and at the present time enjoys excellent motion and power over each. Such a fortunate result must be ascribed to the mode in which the incisions were conducted, free and extensive as they were, and to the full administration of stimulants and nutriment, with the repeated doses of opium.—*Dublin Journal of Medical Science, Nov.* 1874, *p.* 369.

43.—ON THE TREATMENT OF POPLITEAL ANEURISM.

By Timothy Holmes, Esq., M.A., Professor of Surgery and Pathology to the Royal College of Surgeons.

The first step in the treatment of popliteal aneurism is to ascertain as accurately as may be these particulars with regard to the case in hand, and to base upon them the important choice of the method to be first adopted. The choice between the ligature and some form of pressure (including genuflexion amongst the latter) will rest chiefly upon the presence or absence of a thick well-formed sac, lined with some amount of coagulum, on the judgment of the surgeon as to the relations between the sac and its orifice, on the acute or chronic nature of the symptoms, and on the presence or absence of disease of the heart, arteries, and kidneys. Those are the most promising cases for the success of the compression treatment in which the symptoms are not urgent or rapidly advancing, in which there is a strong sac and a certain amount of fibrine already deposited, and where the character of the bruit and of the pulsation points to the conclusion that the aneurism is not fusiform. And in cases where the presence of other general complications renders the surgeon anxious to avoid the risks attending a serious operation, we know that compression has very often succeeded, although we also can point to many cases of successful ligature of the femoral artery in patients suffering from cardiac or renal affections, or with aneurism in other parts.

The question what form of pressure to select is one which I must leave till I have discussed the various methods.

Then comes the question, if compression does not succeed at first, how long should it be persevered with ? This question can of course only be put or answered in very general terms. It resolves itself, as far as I see, into this. Have we evidence so conclusive of the greater freedom from danger attending on compression, as compared with the ligature of the femoral artery, as to make us anxious to persevere at all hazards in the attempt to cure popliteal aneurism in this way, even in cases where pressure causes much suffering and seems at first to produce little effect ? My own opinion is that we have not. I am quite ready to admit that in many instances the determined persistence in compression has been rewarded by ultimate success, after weeks or months of tedious endurance, and sometimes even of acute suffering. Perhaps too little attention has been paid by surgeons generally to the great distress which such prolonged compression causes—the ulceration, the enlargement of glands, the pain, the engorgement of the limb, and the mental distress and disappointment. But, nevertheless, if it could be clearly shown that all this is necessary in order to diminish the mortality, it would clearly be our duty to induce our patients, if possible, to submit. I cannot say that this has at present been shown, nor can I show it by any evidence I have been able to collect. All the facts in my possession tell the other way. Pressure does sometimes succeed after prolonged perseverance, but usually, I believe, it fails ultimately when during the first few days it has not, at least so far, succeeded as to ameliorate the patient's condition, to diminish the size of the tumour and the strength of its pulsations, and produce some enlargement of the collateral vessels.

This risk of ultimate failure would, again, be of the less moment if the doctrine which is now generally taught, and which has been adopted into our text-books from Mr. Jonathan Hutchinson's researches, were true—namely, that when compression fails, it does not usually fail utterly, but that its failure is balanced by the diminished risk which, under those circumstances, attends the ligature of the femoral artery. But I much fear that this doctrine is not true. Mr. Hutchinson's numbers were very small, and were not in themselves very convincing. The larger experience contained in my table of hospital cases leads to precisely the opposite conclusion, and it is that which seems more consistent with *à priori* probability. I am reluctant to abandon an opinion which I have taught, and, as I then thought, on sufficient authority; but I must admit that the evidence up to the present time leads to the conclusion that a patient is not more but less likely to recover from ligature of the femoral if a prolonged application of pressure has previously been made.

And if to all this we can add, as I hope we can, that the Hunterian ligature is much less dangerous than we have been taught to consider it, the motive for avoiding the alternative of tying the artery, even at the cost of much suffering to the patient, would be taken away. And I think I can show very good reasons for believing that the estimate of the danger of ligature of the femoral artery, based as it is in a great measure on the results of practice in former generations, handed down to us by Norris and other statistical writers, is much more unfavourable than present hospital experience justifies. So that the general conclusion would be that it is better, after a careful but very moderate trial of the compression treatment, to abandon it, if it does not seem to be doing good, and to resort to the ligature before the patient's chance of recovery from that operation has been permanently impaired. How long a time is involved in the expression "a very moderate trial" it may be rash to try to specify. There must be much variation in individual cases; but my own impression is that more harm than good generally results from protracting the attempt beyond a week. I would, however, stipulate that the trial should be really careful—that is to say, that precaution should be taken to see that, whatever form of pressure is adopted, it is constantly applied with accuracy, and is really producing the effect intended during the whole period of its application. And I would urge upon country surgeons, and others who are not in a position either to superintend the compression treatment themselves or to leave it in the hands of perfectly careful and competent assistants, to reflect whether it would not be safer for the patient either to tie the artery at once, or to send him to some institution where the more troublesome mode of treatment can be efficiently carried out.

We shall do well, to commence the discussion as to the relative merits of compression and the other bloodless methods of treating popliteal aneurism by the very distinct assertion that we have in the Hunterian operation a method which almost always succeeds, if the patient recovers from the operation; and which may be expected confidently to be followed by recovery in the very large majority of cases, especially if the dissection be skilfully and carefully conducted, so as to avoid all violence to the vein and all unnecessary exposure or contusion of the artery.

As far as they are to be learnt from our table, the results of the compression-treatment of popliteal aneurisms may be thus expressed:—Compression was tried in 66 cases with success, and in 58 cases without success. Of these latter, the artery was afterwards tied in 44; amputation was practised in 8. Death occurred in one case. In 4 cases there is no evidence of any subsequent treatment, though in one of them, which occurred at St. George's Hospital, it is believed that the femoral artery was afterwards tied with success at St. Bartholomew's. Finally, one case is left in which the aneurism had recurred after apparently successful ligature. Pressure in all its forms was now tried and failed; but manipulation seemed to produce consolidation, at any rate for the time.

The most interesting questions in this record of experience are those which refer to the frequency of the failure of compression; to the effect which compression may have, if it fails, on the future progress of the case; and to the form of pressure which it is best to employ. I will address myself to these matters in their order.

First, as to the frequency of failure. It seems certainly at first sight a discouraging fact that pressure should have failed 58 out of 124 times—that is about as often as it succeeded. But I am not prepared to admit that this result furnishes any valid argument against the treatment. We must remember that these cases go back a long way in the history of compression, and many of them were under the care of surgeons who were by no means favourable to the use of pressure, and had no experience of the way of carrying it out. One of them, for instance, was under Mr. Syme's care, who felt certainly little interest and less confidence in this novel method of treatment. Then, again, it is quite permissible, I hope, to say that in hospital practice many little details which in private receive the attention of the surgeon himself, are confided to students and dressers, or to nurses, who cannot, even when they give all possible care to the case, manage such details as well as the surgeon himself would do, and who are not always as careful as they might be in carrying out a treatment undeniably tedious and wearisome. I have often found the tourniquet tightly screwed down into the thigh, but the artery not compressed at all. I have often seen it applied with such injudicious and unnecessary force as to cause the failure of a treatment which might easily have been successful if more skilfully used. I have known a case in which the patient used to relieve herself from the instrument, and walk about the hospital, with the connivance of the nurse, on changing whom the treatment was at once successfully completed. The compression treatment depends for its success on minute attention to all the little details of the case, and can only be properly carried out by persons both skilful and scientifically interested in the matter. It requires far more care and time on the surgeon's part than the ligature, and if confided to others will very often go wrong. But, besides all this, we must not forget that the great majority of these cases were treated by instrumental compression, and I think it is beyond all question that digital pressure is in every way superior.

Yet, if we allowed that failure must continue to occur in half the cases so treated, ought this to discourage us or to forbid the trial of pressure? Plainly not, however successful the ligature may be, unless there is some great reason for believing that it will spoil the prospects of the successful treatment of the case afterwards. For the application of pressure in favourable cases certainly exposes the patient to no risks, while the ligature of the femoral artery, however favourably the operation may proceed, must always involve considerable danger.

And we must not forget that in a table such as this cases must necessarily be included under the head of "compression" where that treatment has been most imperfectly carried out, and which were possibly altogether unsuited for it. Thus in a case of very rapidly growing aneurism, at one of the provincial hospitals, the surgeon wished to try the effect of pressure with one of the then recently invented apparatus; not having it at hand, he was obliged to use a rude and ill-fitting instrument, which only did harm. The tumour grew rapidly; the femoral was tied, but gangrene followed and amputation became necessary. Such a case, if treated by pressure at all (which would be a doubtful point), should be treated by the most careful and exact digital pressure. An ill-fitting instrument, probably gorging the veins with blood and allowing the artery constantly to escape, while distressing the patient with the pain it causes, can only prejudice his chance of ultimate recovery. The only case in which death occurred while the patient was under the treatment was one in which pleurisy accidentally supervened, and, as this seems to have been unconnected with either the disease or its treatment, no more need be said about it.

But there can be no doubt that in this, as in other methods of treatment, disasters will occur. Thus there are eight cases in which amputation became necessary from gangrene, rupture or suppuration of the sac. Of these, five died, and three recovered. The amputation was not, however, in all cases necessitated by the compression; at least, not by this only, for in at least one instance a temporary ligature had been applied to the femoral, and in another the compression (instrumental) had only been applied irregularly and at long intervals, so that the gangrene of the foot which supervened probably depended on the increase of the tumour, and might very possibly have really been obviated by more persevering use of the treatment.

Still we must not lose sight of, still less conceal, the fact that in some cases instrumental compression may produce gangrene by obstructing the vein; that digital pressure, particularly when ill or carelessly applied, may do the same; that either of them, if it does not cure, may easily aggravate the disease; and, finally, that genuflexion, as I shall try to show in its proper place, has dangers of its own which lead to rupture of the sac, and sometimes to gangrene of the integuments which cover it. So that in a small proportion of cases pressure certainly has spoilt the case so completely as to render amputation necessary—an operation which, I need not say, is in such circumstances one of peculiar danger.

There are also, as it seems, cases in which pressure produces a direct effect on the artery, and some in which the tissues around the artery are much thickened and consolidated. The longest period during which compression has ever been applied to the same spot, as far as I know, was in Verdier's case, where the patient kept the apparatus applied to the external iliac artery for more than four years, sufficiently tightly to command the circulation through the aneurism. The result, as figured in Verdier's book, was only that the coats of the artery seemed a little thickened and hardened at the seat of pressure. Mr. O. Pemberton, however, has related a case in which an arterio-venous communication formed at the place where the femoral had been compressed for several months, in the treatment of an aneurism of the posterior tibial artery. I have myself experienced much difficulty, while tying the femoral artery on a patient who had been subjected to various forms of compression, in separating the artery from the vein, and many surgeons have spoken of the brawny character of the tissues through which they have had to cut when tying arteries after long-continued compression. These possible ill effects of compressing, even though we should believe them to be exceptional, as is probably the case, furnish another reason for limiting our trial of pressure to a moderate time, and for resorting to ligature before such lesions can have been originated.

I may, perhaps, conveniently speak in this place of the general question of the direct effect of pressure on the structure of the vessels on which the force acts. In the first place, all experience and all authority lead us to believe that any visible or tangible anatomical lesions are perfectly exceptional. Dr. Bellingham and Mr. Tufnell appear disposed to deny their existence, but this position can hardly now be sustained. Every one, at any rate, is agreed that the action of long-continued compression is often plainly perceptible on the cellular tissue which supports and unites the vessels, as it was in the case to which I have just referred in my own practice, as well as in cellular tissue and muscles of the whole limb, when long-continued œdema has resulted from its use.

In Verdier's case, the contrast between the point at which the pressure has acted and the neighbouring portion of the vessel is perfectly perceptible, although the drawing is not all that could be desired.

Verneuil has recorded two cases in which he has found the vein obliterated at the point of pressure.

Mr. Pemberton's case, however (of which the preparation and diagram are before you), is the only one, as far as I know, where any very serious vascular lesions have been attributed to the long-continued use of pressure, and in that instance it is impossible to deny that the pressure was, to say the least, a very probable cause. The arterio-venous communication exists at the exact spot where the femoral artery had been so long compressed against the pubes. It was discovered ten months after the cessation of the pressure, and that interval appears to me a very natural period for the discovery of the disease if it were formed as the result of a chronic degeneration in the wall either of the artery or the vein, the vessels having previously been matted together by the pressure. The only difficulty in accepting this view is furnished by the very analogous case of Mr. Perry, the preparation of which, from St. Bartholomew's museum, is on the table, which corresponds very curiously with Mr. Pemberton's in almost every feature, except this (which, however, is very important), that there was an aneurismal sac—a true varicose aneurism—lying between the vessels, and partially ossified, and it was evidently the pressure of this partly ossified aneurism on the vein and its rupture into that vessel which gave rise to the arterio-venous communication. In Mr. Pemberton's case there was no such tumour, and no such reason for any communication between the vessels; nor can I understand how the artery, if we assume that it was diseased and gave way spontaneously, could have opened into the vein unless the two vessels had first been brought into unnatural contiguity, for which no reason can be assigned except the pressure. I accept this case myself therefore as one of a lesion produced by long-continued pressure, and as far as a single case can go, it furnishes an argument both for avoiding too long continuance of compression, and for avoiding as much as possible the compression of the vein along with the artery.

Mr. Pemberton himself has, however, changed the view of this case which he held at first, and has suggested that the disease and the communication between the two vessels may be a result of the cure of the aneurism below; indeed, he goes so far as to say that he believes the formation of arterio-venous aneurism "to be a not uncommon result of the cure of aneurism, after it has been effected for some time." In support of this he relates a case under the late Mr. Amphlett's care, the preparation from which is now on the table, through Mr. Pemberton's kindness, where, after the ligature of the femoral artery for femoral aneurism, an arterio-venous aneurism formed three years afterwards at the seat of the ligature. This occurrence, however, does not, to my mind, in the least invalidate Mr. Pemberton's previous explanation of the arterio-venous aneurism in his own case. I believe that it originated in some chronic degeneration either of the wall of the artery or vein, or the cellular tissue uniting them (or, as is perhaps more probable, in all these tissues), the result of long-continued pressure; and it seems to me most probable that in Amphlett's case a similar degeneration had followed upon the violence done to the parts in the operation, and the irritation caused by the ligature afterwards. That the formation of arterio-venous aneurism higher up is "a not uncommon consequence" of the cure of aneurism lower down, I have found no evidence—in fact, amongst the multitude of cured aneurisms of which we have record I do not know that the fact has ever been alluded to. In Parry's case an arterio-venous aneurism higher up formed simultaneously with an arterial aneurism lower down, but the latter had never been cured.—*Lancet, Dec.* 12 *and* 19, 1874, *pp.* 826, 861.

44.—ON TRAUMATIC POPLITEAL ARTERIO-VENOUS ANEURISM TREATED SUCCESSFULLY BY LIGATURE OF THE POPLITEAL ARTERY AND VEIN.

By Thomas Annandale, Esq., F.R.S.E., Surgeon to the Edinburgh Infirmary.

Peter R., aged ten, was admitted into my wards in the Edinburgh Royal Infirmary, on the 28th of October, 1874. Three months before admission he received a wound in the popliteal space from the point of a pair of scissors. Blood poured from the wound in a large stream, but a jacket bound round the knee and wound partially checked the bleeding, and a woman supposed to possess some medical knowledge being sent for, a bandage was applied by her and the hemorrhage completely stayed. Three days after the accident the bandage was removed, and no bleeding followed, but a small swelling was observed in the region of the wound. The advice of a schoolmaster being taken at this stage of the case, poultices were applied on his recommendation, and were continued for some days, until a small piece of "dead flesh" had come away. After this tincture of myrrh was applied to the wound, which soon healed soundly. The swelling was observed to beat quite distinctly, and caused him much pain during both the day and night. His leg was often cold, and he was glad to get up at night and warm it at the fire, as heat always relieved him. After the first few days following the accident the patient was allowed to go about, and one month after the injury he went to visit a relative at some distance, and was walking for nearly a whole day. The swelling had been very slowly increasing; but one month ago, after receiving a kick over the same region from a donkey, a more rapid increase in its size took place, and for the first time, he was seen by a medical man, who advised him to come into the infirmary.

When admitted, a swelling the size of an infant's head, and of an irregular shape, occupied the popliteal space, and passed upwards for a short distance along the posterior aspect of the thigh. The swelling was seen to pulsate, but not very forcibly; and when the hand was placed over it, the characteristic aneurismal expansion could be felt on all its aspects. No peculiar thrill could be felt in the swelling. Pulsation was absent in the anterior and posterior tibial arteries at the ankle. At one point the swelling was very prominent, and the skin over this point was thinned and discoloured.

The case being diagnosed as one of traumatic aneurism of the popliteal artery, it was decided to treat it by laying open the sac and tying the artery above and below the wound.

On the next day, the 29th of October, I proceeded to operate in the following manner. A tourniquet being applied to the femoral artery in the upper part of the thigh, I made a small incision into the centre of the sac, sufficiently large to admit my forefinger. My reason for making this limited opening in the first instance was, that I could, if necessary, restrain any hemorrhage until the finger had made an examination of the sac and separated any adherent clots. I learned the value of this practice in assisting the late Mr. Syme in most of his serious operations on large aneurisms. Having searched the sac with my finger, I gradually withdrew it so as to lay the whole cavity open, but on doing so free bleeding took place, and, as it seemed probable that this hemorrhage was coming from the distal end of the wounded artery, an elastic ligature was applied round the upper part of the leg, the finger being kept in the wound as a plug in the meantime. The sac was then opened freely by a wound about five inches in length and all the blood and clot in it sponged out. There was not very much clot, the contents consisting principally of fluid arterial blood. By this proceeding two openings were clearly exposed at the bottom of the sac. These openings were parallel to one another at a distance of about an eighth of an inch in the longitudinal direction of the limb. They were both about a quarter of an inch in length, and had the appearance of slits with little gaping of the edges. A probe passed into each opening determined the fact that one communicated with the canal of the popliteal artery, and the other with that of the popliteal vein. The canals of both vessels were pervious as far as the probe would pass above and below the wounds. The sac of the aneurism was well formed, circumscribed, and white and smooth on its inner surface. The popliteal artery, being carefully cleared by dissection for a short distance, was ligatured above and below the wound with prepared catgut; and the popliteal vein, being cleared in the same way, was also ligatured above and below the wound with the same material. The tourniquet and elastic ligature were now removed, and a small artery and vein which bled, in the region of the wounded vessel, were tied also with catgut. A drainage-tube was then introduced into the cavity, and antiseptic muslin was applied in the usual way, after the edges of the wound had been stitched together. The whole operation was performed under the antiseptic spray.

On October 30th the report is that the patient had passed a good night. There was slight œdema of the foot, but the temperature of the limb was good.

On November 1st a small piece of discoloured clot with a few drops of purulent fluid escaped from the wound. The temperature of the limb was good, and the cavity of the wound was contracting. No pulsation had as yet been felt in the tibial arteries at the ankle. The œdema of the foot was less.

On November 8th the superficial portion of the wound was healed except where the drainage-tube was inserted. The cavity was contracting rapidly, and there had been no more purulent discharge. All the sutures were removed.

On November 17th the drainage-tube was removed, the cavity having contracted. There was only a small superficial sore where the tube had been introduced.

On November 26th the antiseptic dressing was removed, and solution of boracic acid applied to the small sore which remained. There was still a slight œdema on the side of the foot on which the limb rested. Pulsation in the tibial arteries remained absent.

On December 1st the wound was quite healed, and the patient was allowed to leave his bed, and go about the ward on crutches. There was a little weakness of the foot, but the knee-joint and limb were perfectly movable and strong.

On December 26th the patient walked freely without support on the affected limb, the foot of which still remained somewhat weak.

Remarks.—The case just reported is one of great importance in connexion with the surgery of the bloodvessels. The absence of the peculiar thrill which has always been considered diagnostic of arterio-venous aneurism is a point of interest. Had the operation not so distinctly disclosed the presence of a wound in both artery and vein, I and those who saw the case would have looked upon it as one of *traumatic aneurism of the popliteal artery.* The reported cases of traumatic arterio-venous aneurism of the large arteries are not numerous, but in most of these, as far as I can ascertain, this symptom was observed, and directed attention to the true nature of the case. An examination of the wounded popliteal vein, made at the time of the operation, did not discover any appreciable dilatation of its canal, such as has usually been noticed in arterio-venous aneurism, and therefore I am inclined to think that, although a wound in both artery and vein communicating with the aneurismal sac existed, there was little or no communication through these wounds between the arterial and venous circulation. This conjecture may be explained by the longitudinal direction of the wound in the vein, and its position in regard to the corresponding wound in the artery. Be the explanation what it may, the fact of the absence of the peculiar thrill in this instance must be considered as quite exceptional in connexion with arterio-venous aneurism.

The most instructive part of this case is a consideration of the treatment which was successfully adopted. Mr. Holmes in his very valuable lectures on this subject, directs attention to the methods of treatment which have been employed in cases of arterio-venous aneurism of the femoral vessels. These methods may be enumerated as (1) ligature of the artery after the Hunterian plan, (2) compression, (3) ligature of the artery above and below the sac without opening the latter, (4) laying open the sac and tying the artery above and below the wound, the vein not being interfered with.

A consideration of the treatment of the reported cases of arterio-venous aneurism shows that the *first* of these operations has proved most unsatisfactory; that the *second*, when it can be applied accurately, so as to cause obliteration of the venous communication, has proved and is likely to be useful; that the *third*, although it has proved successful, is only applicable in certain cases, and necessitates a difficult dissection; that the *fourth*, although it has proved successful, is attended with great risks—(1) from venous hemorrhage, (2) from purulent absorption.

The method employed in the case related has, as far as I am aware, never before been practised, but it is only just to state that Mr. Holmes, in his remarks, suggests the advisability of this proceeding, and refers to instances where both arteries and veins have been obstructed or ligatured without bad consequences following.

The result of the operation in my case tends to prove that surgeons have taken a too serious view of the risks likely to follow the ligature or obstruction of the principal artery and vein of a limb. One principle in all former operations for the relief of arterio-venous aneurism has been to avoid any interference with the vein, but this case has now practically demonstrated that both artery and vein may be successfully ligatured.

Should carefully-applied compression fail to relieve an arterio-venous aneurism, my recent experience inclines me to advocate the operation performed in the present instance, provided the case be one otherwise suitable for an operation.

The advantages of this plan are, in my opinion, (1) certain closure of the openings of communication in both artery and vein; (2) absence of any risk from venous hemorrhage or absorption in connexion with the wounded vein; (3) its practicability in the large majority of cases; (4) its easy performance without much dissection.

By the employment of the antiseptic treatment in the present case, all local irritation in connexion with the sac and wound was prevented, and suppuration was limited to the single discharge of a few drops of innocent pus.

In consequence of these facts, I consider myself justified in attributing to this treatment much of the success of the case, and I would therefore recommend its adoption with great confidence in this class of operation.—*Lancet, April* 24, 1875, *p.* 568.

45.—FORTY CASES OF NÆVI SUCCESSFULLY TREATED WITH ELECTROLYSIS.

By S. J. Knott, Esq., Medical Superintendent of Galvanism to St. Mary's Hospital, late Medical Tutor and Pathologist, &c.

I think I have related below a sufficient number of cases to show the value of the treatment I wish to advocate. I use Stöhrer's and Meyer and Meltzer's continuous batteries, and judge according to the size of the nævus how many cells to use—six or eight is about the average if the battery is in good working order. If the nævus is small I use one or two needles attached to the negative pole, and one to the positive, and pass them into the tumour; but if large, I put on several needles in the negative cord, and use charcoal point with the positive. After the needles have been in the tumour a short time decomposition begins to take place; this is shown by bubbles of gas passing by the side of the needles. A clot is then formed, the tumour turns of a bluish white, and in this clot fibrous degeneration takes place, and ultimate cure is the result. The advantages of the galvanism are its certainty of action, its safety, the faintness of the cicatrix, and the cessation of pain directly the operation is over. I have used every other method, and I certainly think this by far the best.

R. D., aged four months. This child had a venous nævus on the end of the nose, which made the latter look blue and bulbous. Two needles were applied on the 4th of December, 1872. The child was not seen again till the 20th of the following April. It was then quite well.

A. S., aged four months and a half, was brought to me on the 21st of March, 1873, with a capillary nævus on the inner side of the right labium magus, about the size of a split almond. Two needles applied. Discharged cured on April 26th.

E. T., aged five months, was brought to me on the 21st of October, 1873, with a capillary nævus of the right eyebrow, about the size of a sixpence.

being satisfactorily obliterated above and below the part that has been removed.

Remarks.—Now the original cause of this man's varicose veins must no doubt be looked for in some mechanical hindrance to the circulation, some impediment to the return of the blood from the lower limbs, dependent on laborious work in the upright posture. Neither the syphilis nor the rheumatism can be held responsible for the local affection, for this begun at an early age, before he had been affected by either disease; nor is it understood that syphilis in any direct way predisposes to varicosity of the veins; nor does rheumatism, except by affecting the heart. At the same time all impairment of the general health must lessen the force of the circulation and weaken the coats of the veins.

As a rule, the veins of the leg gradually enlarge upwards from a little above the ankle; but here they are said to have become dilated almost simultaneously from groin to ankle, pointing apparently to some cause of embarrassment to the circulation acting from above downwards. Notice, however, in this case, what is so frequently observed, the great bulging of the saphenous vein just before it entered the saphenous opening—a condition so constant as to have suggested to Mr. Herapath that narrowing of this opening was the cause of the disease, and he accordingly enlarged it for the cure. This idea has, however, been long exploded, for the deep veins of the limb, which have no relation to this aperture, are also liable to become varicose. Nevertheless, when the upper part of the saphena vein has already become enlarged, its unusual dilatation in this position may be explained by the then increased pressure on its sides caused by the margin of the saphenous opening.

Not attempting here to discuss the *pathology* of this affection fully, I will merely state that, the primary cause being held to be some mechanical impediment to the return of the venous blood, it happens that if this acts temporarily with healthy veins, the effects are only temporary, as is so frequently exemplified in the varicose condition of the veins which is produced during pregnancy, and entirely and rapidly disappears after parturition. But if the cause act continuously, or if the veins themselves become weakened or their valves disorganised, then the over-distension becomes *confirmed.* There next occurs a further diminution of elasticity and contractility in the venous coats (even though these become thickened) owing to the proper tissues becoming gradually atrophied, and being, as it were, replaced by a dense connective tissue. The valves also become incompetent, stretched out, or destroyed; and so the weight of the whole column of blood acts on the whole vein, which then becomes permanently enlarged and elongated.

Turning now to the *treatment* of varicose veins, it must be said, first of all, that cases in which there is no constant or severe pain, no ulceration or hemorrhage, or no impediment to the performance of the ordinary duties of life, are to be dealt with by friction, position, cold, and bandages. But more severe cases, such as the one here described, may be treated by various operations, the more recently suggested ones all having for their object the *closure of the diseased veins.* This is by no means easy to accomplish; for fortunately, as regards the well-being of the economy, the lining membrane of veins does not readily undergo the adhesive inflammation. Moreover, at best the cure is temporary, as some of the neighbouring or anastomosing veins take on the varicose state after a certain time. But as such operations afford relief for months, and in some cases for years, the temporary character of this relief is no absolute bar to their performance. Now, a vein is best obliterated not by pressing the sides against each other, for its internal surface, as just said, is not prone to adhere, but by stopping the circulation through it, which renders it useless to, or unemployed in the economy; so that, in accordance with the general rule as regards useless or unused parts, it shrinks and disappears. But in addition to such changes which occur naturally in the closure of the umbilical vein and ductus venosus, for example, most operations for the cure of varicose veins intentionally promote the formation of a *clot* in their interior, which clot, adhering to their walls and slowly contracting, first draws the sides of the veins together, and afterwards becoming the seat of organisation undergoes further contraction and ultimate absorption, the veins themselves being then closed, and finally reduced to mere cords. Various processes accordingly contribute to this end.

In considering the numerous operations that have been proposed for varicose veins of the lower limbs, we find that some, relying on the adhesive process only—as, for example, simple long-continued pressure—are inefficient; others, such as the method by cautery or caustics, which produce sloughs, are tedious; whilst many, such as those by excision, incision, seton, galvano-puncture, or injections, are dangerous to life. The dangers lie not so much in the possible occurrence of local phlebitis and periphlebitis, as in the possible formation of soft or unhealthy or imperfect clots, which, with or without accompanying suppuration, may loosen, break down, and originate emboli, or set up septicæmia or pyæmia. This danger is so serious as to cause considerable anxiety in the mind of the surgeon who has to deal with a case of varicose veins requiring operation. The injection of tannic acid or of perchloride of iron into the vein is especially dangerous, and so also are the galvano-puncture, and the passage of hairs, threads, or wires across the vein, as the clots thus formed are partial, and liable to be detached; galvano-puncture is, moreover, very painful. Caustics and the actual cautery are not now employed, as the destruction of the skin necessary is quite useless, greatly prolongs the period of treatment, and certainly does not lessen the chances of septicæmia. Extirpation of small knotted portions of a varicose vein was practised by the old surgeons; but this method was not applicable to long or tortuous veins, and involved great risk. Boyer first ligatured and then cut into the vein, whilst Bell tied and then removed some portions of the vein. But the mere laying open often failed, as the channel was restored again in many cases. To obviate this, Gräfe laid the vein open, and then plugged it with lint to insure its healing by granulation. Experience soon revealed that such severe operations were too dangerous, so that modern surgery has recourse to milder methods of cure, all of which adopt the principle variously modified of attempting to close or obliterate the vein at intervals by means of ligatures, wires, or pins, by which the vein is for a time compressed. After all these operations, however, the vein often opens again, partially or completely, so that a further, and when successful, a more satisfactory proceeding is employed by some—viz., the subcutaneous incision of the vein between the ligatured parts. Sir Benjamin Brodie frequently performed this subcutaneous section, followed by pressure, but abandoned it as ineffectual. It is Mr. Henry Lee that introduced a combination of the ligature with the subcutaneous section; but undoubtedly this plan does involve the risks attendant upon cutting into veins, from which the subcutaneous character of the section does not always protect us. This complex proceeding has indeed been followed by troublesome and even fatal results. Thus, the choice may be said to lie between a comparatively safe but only temporarily beneficial, or quite inefficient operation, and a really efficient but somewhat dangerous one; and be it remembered that even the interrupted ligature alone, without intermediate section of the vein, is not free from risk. It was natural to suppose that the antiseptic method of treatment might be employed for these or still bolder operations on veins with great advantage, if it would prevent the occurrence of those processes which so often end in suppuration or softening of the clot—pyæmia or septicæmia; and that thus it might render operations on veins as free from danger as others of a more simple nature. Accordingly, I first employed this method in three cases, when using the ordinary pins and figure-of-8 sutures; in each the result was most favourable, for there was no suppuration whatever around the pins, and no fever, and the cases terminated in from five to seven weeks. This success encouraged me to attempt the more formidable operation I have just described, for, as I have before said, the simple ligature only accomplished a doubtful or brief cure as a rule. It was my intention at first merely to slit up the vein and plug it with antiseptic gauze; but at the operation the thickened, dilated, and tortuous vessel, when opened, formed, with its incurved edges, such an irregular and loosened mass to leave in the wound, that I then determined to remove it entirely, and I am sure now that this is the better plan. In future, I should make an incision through the skin in a direction best suited to the position and form of the straight or tortuous vein, expose the vessel, which is very easy of accomplishment, put a carbolised ligature on it above and below, and then seize one end of it with a tenaculum forceps, and dissect it out. The application of Esmarch's bandage renders this operation perfectly bloodless, and no subsequent hemorrhage need be feared from the lateral veins, however large, which open into the part removed, for this is prevented by a long pad of gauze placed in the wound. It is very interesting to observe that after the antiseptic dressings had been discontinued a part of the vein treated by the pins and subcutaneous section inflamed and suppurated badly both outside and inside the vessel, whilst merely a tranquil process of granulation and separation of primary clots occurred at the orifice of the divided veins in the principal wound. Hence this one case enables us to contrast the dangers of the two methods of dealing with a diseased vein—namely, ligature with subcutaneous section, and complete removal,—for the two parts belonged to the same patient and were under exactly the same circumstances. It will be noted that there was a total absence of fever in this case until the erysipelas set in, which was quite an accident, and probably might not have occurred if the antiseptic dressing had not been discontinued. Again, with the ordinary pin operation the case is never to be considered over before eight or ten weeks; in this case the man left the hospital in between seven and eight weeks, and had it not been for the erysipelas even this period would have been shortened. The result of the operation has thus far been most satisfactory: the part of the saphena vein below the excised portion is completely obliterated; and as the upper part is no longer fed by a long column of blood, it has also become contracted, and, indeed, cannot even be felt, until a point is reached where it receives a collateral branch from the back of the thigh. No superficial veins are at present unduly enlarged.

Thus, then, I think we have a most efficient operation for bad varicose veins rendered easy of performance for the surgeon by the *use of Esmarch's bandage*, and safe for the patient by the employment of an *antiseptic method of treatment*. It will, of course, be understood that the extent of vein to be removed must be left to be determined by experience and by the actual necessities of any given case.—*Lancet, Jan.* 23, 1875, *p.* 113.

ORGANS OF RESPIRATION.

47.—DIVISION OF THE ISTHMUS TO RELIEVE DYSPNŒA IN CERTAIN CASES OF BRONCHOCELE.

By Sir G. Duncan Gibb, Bart., Physician to Westminster Hospital.

[When the isthmus of the thyroid gland is enlarged there is usually a good deal of dyspnœa from pressure upon the trachea, to which very soon it becomes strongly adherent. A case of this kind may end fatally from extension of the lateral lobes around the trachea. This extension is sometimes very rapid, and the compression is so great that only a narrow oval fissure will be found after death to be all that the patient could breathe through during life.]

I had long thought over the matter, and came to the conclusion that the only remedy in such cases was to remove or divide that portion of the bronchocele which was in contact with the trachea itself—namely, the isthmus, —*before* it had commenced either to encircle the tube or had become too firmly adherent to it. This last summer the opportunity was afforded me to have this practice tried, and I am happy to say with the best results. The symptom that was the most urgent was dyspnœa, owing to the pressure of the enlarged isthmus, which had formed a distinct tumour over the trachea nearly the size of a walnut. This was adherent to the deep fascia over the trachea, and moved up and down with the tube and thyroid cartilage in the act of swallowing. Great distress and discomfort, the feelings of the most miserable and desponding nature, were almost constantly present, invariably aggravated by attacks of recurrent dyspnœa. I was satisfied the lateral lobes were dipping backwards, and in a few weeks or months would have irretrievably compressed the trachea.

On the 11th, after chloroform had been given, an incision was made through the integuments in the median line over the trachea, about two inches long, the superficial fascia and then the deep were divided on a director, and, finally, the surface of the tumour was exposed, which in size approached that of a flattened walnut. The isthmus on either side of this was more slender and smaller in bulk than the tumour, which permitted of a strong ligature being placed on either side of it with the aid of an aneurism needle. The isthmus was then freed to the inner side of each ligature, divided, and wholly removed, the trachea being observed to be quite free. There was not much bleeding, although several small veins ramified on the surface of the tumour. Subsequent examination showed the removed isthmus to be partly cystic in its character, for on section, one cyst especially was divided, giving exit to some fluid; the remaining portion looked like degenerated glandular tissue.

By the 14th the wound was nearly healed; on the 17th the last ligature came away. A few days later the wound was perfectly healed, and she left the hospital, feeling no inconvenience about the trachea in breathing or swallowing. The relief afforded by the removal of the isthmus may be described as truly wonderful.

On the 16th of November she called upon me in perfect health; she had got stouter, had married, and there was not a trace of her old symptoms. The trachea could be felt uninterruptedly free from the root of the neck upwards, and the enlarged thyroid gland on either side seemed to have receded from the median line, and was less prominent.

The results in this case fully justified the hopeful view entertained of the operation, and it was not long after that another opportunity was afforded of again trying its effects, under circumstances somewhat differing and even more unfavourable.

Alice D., aged seventeen, a healthy-looking girl, was sent to me by my friend Mr. M. W. Chambers, of Sutherland-street, Warwick-square, with general swelling of the entire front part of the neck, especially above the clavicles, from enlargement of the thyroid gland, which, it appeared, had existed since her birth. Whilst there was an unusual fulness of the neck, there was not the great prominence observed in most cases of bronchocele; yet the swelling was traversed by numerous enlarged and tortuous veins, through its extension behind the clavicles and pressure upon the subclavian and other deep-seated veins. This gave rise to some facial turgescence and a ruddy complexion. The isthmus was felt continuously from the one side to the other, and was closely applied to the trachea, giving rise to occasional dyspnœa, dysphagia, laryngeal cough, and general discomfort, which had induced the girl's mother to seek advice for her. She was admitted into Westminster Hospital under my care, and put upon preparations of iodine internally, and the use of the bromide-of-lead ointment, as in the first case. She certainly improved, and the swelling became softer. But in the early part of December she had symptoms that simulated an attack of laryngitis with such extreme dyspnœa for two or three nights that the house-surgeon was called up to open the trachea. Fortunately relief was obtained without resorting to that measure, and she got better; but as it was hopeless to expect a cure, or even permanent relief, whilst this enlarged isthmus remained, I concluded that surgical interference might do more than medicine, and requested Mr. Holthouse to see her. As everything was favourable he consented to remove the isthmus. On the 15th December she was narcotised with chloroform, and as she had eaten some food shortly before, this was vomited, and during the act the prominent isthmus was seen to move up and down synchronously with the thyroid cartilage, pointing to close and firm attachment to the trachea. An incision was made one inch and three-quarters long below the thyroid cartilage, which divided a small vein that had to be tied; another, rather large, coursed upward from right to left, which was avoided. The superficial and deep fascia being divided upon a director exposed the isthmus which suddenly cropped up like a hernial tumour. This was found to be fully an inch wide, proportionately thick, and firmly attached to the trachea. Mr. Holthouse cautiously detached it by means of curved scissors, and then passed an aneurism needle under it, armed with a double ligature permitting it to be tied in two places, as wide apart as possible. As these ligatures were likely to become detached in the event of division of the isthmus it was considered prudent, with my concurrence, to leave them in to slough out, and thus avoid the risk of hemorrhage. The wound was closed and the patient conveyed to bed. Without giving the progress from day to day, it may be stated that everything went on well, the ligatures came away in a reasonable time, there was some free suppuration of the portion of the isthmus between the ligatures, and finally the wound healed. The general turgescence of the face seemed to have wholly gone, and the decided prominence of the neck became less, the circumference having become reduced from 14½ to 13½ inches. There was a disappearance of several of the cutaneous veins, except at the lower part nearer the clavicles. The relief to the general tension across the neck was the chief point gained, and no discomfort was experienced such as had been present before the operation. This can be well understood, on reflecting that the isthmus was then exerting a pressure upon the trachea and adjacent parts like a strong band tied around the neck.

That the results will be as favourable here as in the first case there is good reason to believe, but I should prefer as a rule a good large portion of the isthmus to be removed to simple division, as there is less likelihood of any subsequent adhesion to the trachea; and as to the hemorrhage from a divided portion of the gland, I think the danger to be feared from it is much overrated.

Although the enlarged thyroid gland has been wholly removed several times with success, and quite recently by my friend Dr. Fenwick of Montreal, by Dr. Wolfred Nelson of the same place, and by Dr. Beaumont of Toronto, yet I believe that this is the first occasion in which the isthmus has been either wholly removed or divided, at my suggestion; and the extreme importance of the subject is my excuse for bringing it before the notice of the profession. I have no doubt that this new remedial measure will receive a fair trial, and I feel confident that it will become one of extreme value and importance in a very dangerous class of cases.—*Lancet*, *Jan.* 23, 1875, *p.* 121.

ALIMENTARY CANAL.

48.—TREATMENT OF FISSURE OF THE ANUS.

By Dr. Erskine Mason, of New York.

[In a clinical lecture delivered by Dr. Erskine Mason at the New York Charity Hospital, we find the following useful observations on the treatment to be pursued:]

This may be divided into medical and surgical; the latter, however, is by far the most satisfactory in every way, and we might almost say in a moment cures the patient. Under the head of medical treatment, we place, first, the use of mild cathartics, so as to render the fæces more soluble. This, however, but mitigates suffering for a time. Second, the application of astringents and sedatives, as belladonna, zinc, tannic acid, nitrate of silver, &c., to the fissure itself. This certainly will greatly relieve the pain at times, and in young children—and, at times, even in adults—has been known to cure; but you should not place too much dependence upon it, nor waste time by a prolonged use of these means. When they act as curative agents, they do so by destroying the exposed filaments of nerves in the fissure or ulcer, and the parts are then put in a state of rest, and the fissure takes on healthy action and heals.

Our surgical treatment acts just in this way—viz., by putting the parts at rest. This is accomplished by either of two methods: over-distending the sphincter, paralysing it for a time, by means of the fingers, or dividing the muscle with the knife. Over-distension is now perhaps more frequently done in this city, certainly in this hospital. When you use the fingers, which I think are far better than an instrument, you place your two thumbs well into the rectum, so as to include the whole of the sphincter, and then, grasping the buttocks with the fingers, you forcibly distend the sphincter as you bring the thumbs against the tuberosity of the ischium. This, at first sight, may appear a very rough and harsh mode of operating, and is so regarded by some, who, I believe, for this reason denounce it; and again, because it has been said to give rise to undue laceration of the tissues and troublesome hemorrhage. I have resorted to this means a great number of times, and have never seen any but good results follow. When we use the knife, we draw the blade through the centre of the ulcer or fissure, so as to divide the mucous membrane and some or all the underlying muscular fibre of the sphincter. Whether to divide all or only a portion of the muscle is a disputed point. That a superficial incision will suffice, in many cases, in relieving pain and curing the disease, I know from personal experience ; and it does so just in the same way that a caustic may act, viz., in dividing an irritable or inflamed nerve. Should you desire to be more certain of the result of the operation, a free incision of the muscle, thus securing a longer period of rest to the parts, is best, and by many this is always made. . . . Some have seen fit to combine both these methods; and in some instances this may be of service. Thus, a few weeks ago, after stretching a muscle as far as I deemed it safe, and yet on withdrawing the thumbs it did not appear as if distension had accomplished enough to paralyse or impair its tone, I drew a knife through the fissure, and the result was most gratifying. Both methods have their strong advocates; they are both excellent, and will accomplish a cure. If you operate without ether, the knife is the less painful, and if the fissure is but slight and superficial, a slight incision is all that will be required. Should the patient (as some always do) have a great dread of the knife, we can effectually relieve them by means of our fingers. Though myself practising over-distension more than incision at present, I am not quite prepared to recommend one method as much superior to the other. In those cases which, for want of a better name, we call neuralgic affection of the rectum, and which are often accompanied by spasmodic contraction of the sphincter, we have a group of symptoms very like those caused by fissure, yet no ulcer or fissure is detected. In such cases over-distension of the sphincter is the operation to be practised. With respect to after-treatment there is little to be said. As a rule it is but [not ?] necessary to keep the patient in bed; but for a few days you had better keep him quiet, preventing his taking exercise, as walking, or standing for any length of time. I have had patients, after the operation of incision or over-distension of the sphincter, resume their ordinary occupation on the following day, and no trouble follow. I do not, however, advise you to allow your patients to do so in cases where you can prevent them. After the operation, patients, as a rule, are at once relieved of pain, and are rapidly restored to health. In weak nervous patients, who have long been sufferers, some little interval will at times elapse before all the symptoms from which they formerly suffered will cease. And here you must pay attention to their general condition—such as the use of tonics, proper diet, and outdoor exercise. In speaking of the operation by incision or dividing the sphincter, I omitted to tell you that, even if there be more than one fissure present, one incision will suffice, that being sufficient to place the parts at rest. In cases of perineal (*i.e.*, where the fissure is situated in the front part of the anus) fissure in the female, do not be too free with your incisions in that direction, else incontinence of fæces may follow. This no doubt is due to the action of the transverse perineal muscles as well as the other muscles around the vagina which take origin from the perineal centre or body, by their traction keeping the parts from healing. Again, by a too free incision in this locality we may weaken the part which is known in the female by anatomists as the perineal body, upon which the integrity of the female perineum depends.—*Medical Times and Gazette, Feb.* 20, 1875, *p.* 211.

49.—ON OPERATIONS FOR THE RADICAL CURE OF HERNIA.

By Charles Steele, Esq., Surgeon to the Bristol Royal Infirmary.

[The two operations which have obtained most support from the profession are Wutzer's and Wood's. Both, however, have fallen into disuse—the first in consequence of want of permanent benefit in many cases, and the latter, because it has been fatal to several patients, although very successful in its author's hands. If, however, an operation could be devised, offering a good prospect of permanent success, with but little risk, its use might become popular in the profession.]

George Barwell, aged eight, was admitted under my care, into the Bristol Royal Infirmary in May 1873, with large congenital inguinal hernia of the left side, for the radical cure of which by operation his parents had four years before been advised to bring him to the infirmary when he reached the age of eight years. Having had some cases of union by first intention in operations for strangulated hernia, when Lister's dressing was used, I had regretted that I had not stitched the pillars of the rings together with carbolised gut, and thus probably prevented the return of the hernia. Acting on this idea, I operated on this boy in the following simple manner. I made an incision, an inch and a half long, parallel to and between the pillars of the external ring, and dissected down carefully till the pillars were clearly exposed. I endeavoured to roughen their edges by scraping them with the scalpel, and then introduced two catgut sutures at a fair distance from the margins, laying the needle flat against the inner surface of the tendinous tissue, to avoid wounding the peritoneum (both rings being drawn close together, owing to the long duration of the hernia), and tied these ligatures firmly, leaving room for the spermatic cord, cut the ends off close, and then united the skin with the same material and applied the carbolised dressing. The whole operation was performed under the carbolic acid spray. No pyrexia, peritonitis, or bad symptom followed; slight tenderness only in the wound was felt. The child did well; the deep parts united firmly, the superficial granulated; and, after a week, simple ointment was substituted for the former dressing. All was healed in three weeks. The boy was kept in bed as a precaution for a week longer, then allowed to get up, and soon afterwards to return home to the country, where for six months, without a truss or any support, he played about freely without any recurrence. He was brought up meantime every month for inspection, on each of which occasions the parts were found quite firm and sound. But at the end of six months, owing to some unusual exertion, a sudden descent and strangulation took place, and the boy was brought to the infirmary. On examination, the scrotum was seen to be enormously distended, quite four times as large as with the original hernia. It seemed as if all union had given way, and much more intestine than before had been forced through the opening. But by palpation, I found that the scrotum ws full of serum suddenly exuded through pressure on the veins of the cord by a sudden strangulation of the intestine, which proved to be a very small portion. I tapped and drew off the fluid, and, the intestine being returned, the symptoms ceased; yet, during successive days, the gut descended and opened up the orifice to nearly its former size.

My colleagues fully approved of my proposal to repeat my operation, as th case had done well for so long a time ; and I accordingly operated as before, introducing three sutures instead of two, and leaving the cord a less free channel. All healed, as on the former occasion, with no bad symptom ; but, when the external wound was quite well, I applied a truss with a flat India-rubber pad, and desired that it should be always worn until I ordered its discontinuance. I learned by my former overconfidence to give time for effused lymph to become firmly organised.

It is now a year since the second operation. The boy was examined last week, after being without the truss for a day; no impulse could be felt; the deep union was firm, and the boy felt the part well supported. While I say that I thought out and performed this operation as an original matter, I do not assert that I originated the operation; in fact, it seems to me the most likely measure to suggest itself to any surgeon's mind when considering the subject, and I dare say several have performed it. On subsequent search, I find that Professor Gross, in his excellent System of Surgery, states that, in 1858, in a case of ventral hernia, he made a direct incision, pared the edges, and united the deep parts by silver wire-sutures, and the case did well; also that, in 1861, he performed a similar operation in a case of old scrotal hernia, and that, though a sharp attack of erysipelas followed, the result was satisfactory.—*British Medical Journal, Nov.* 7, 1874, *p.* 584.

50.—ON A CASE OF STRANGULATED FEMORAL HERNIA, REDUCED BY LARGE INJECTIONS OF OIL AFTER STERCORACEOUS VOMITING HAD EXISTED MORE THAN THREE DAYS.

By W. Adams, Esq., Surgeon to the Great Northern Hospital.

The case which I have thought worthy of being brought under the notice of the Society this evening, is one of great practical importance in reference to the treatment of strangulated hernia, and also of some cases of obstruction of the bowels in which the cause of obstruction is more obscure. The treatment essentially consists in the injection of a very large quantity of mixed oils—viz., two quarts of olive-oil, three ounces of castor-oil, and three ounce of turpentine, mixed together; and this may require to be repeated. The injection is slowly performed, and a long gum-elastic tube, about nine or ten inches in length, is used. This practice of injecting oil was first brought under my notice by my friend Dr. Kavanagh of Deptford, who adopted it successively in a case of strangulated femoral hernia, the details of which I will now read to the Society.

On Thursday evening, March 13th, 1873, I was sent for by Dr. Kavanagh to a case of strangulated hernia at Deptford. I found the patient, Mr. B., aged 48, suffering from strangulated femoral hernia on the left side. The hernia was small, but well defined, and the symptoms were severe. All efforts to return the hernia by the taxis, aided by the warm bath, &c., had failed, and stercoraceous vomiting had set in at 4 p.m., the day previously (Wednesday).

The history of the case was, that on Sunday previously (March 10th) he had eaten heartily of veal for dinner, and that on Monday he did not feel well. He naturally atributed it to indigestion, and on Monday night took some aperient pills.

On Tuesday the 11th, the bowels acted slightly, but he felt ill, and complained of pain in the abdomen. He had no pain in the situation of the hernia ; but was aware of the existence of the rupture, which, he said, had existed for thirty years, and had first occurred after being thrown out of a gig. He was doubtful whether it had ever been completely reduced, though it fluctuated in size, and he had never worn a truss.

On Wednesday the 12th, he complained of great pain in the abdomen, and vomiting set in; and at 4 p.m. this became of a stercoraceous character. Attempts were made by Dr. Kavanagh to reduce the hernia by taxis in the warm bath, but without success; and the patient persisted in his idea that the obstruction was in the upper part of the bowel, as there was still no pain in the rupture, and the pain was referred to the upper part and right side of the abdomen.

On Thursday the 13th, the patient remained in the same state, and in the afternoon I was telegraphed for. At 8 p.m., I saw him, in consultation with Dr. Kavanagh, who at once agreed with me in the propriety of operating. The patient, however, obstinately refused the operation, principally from his conviction that the obstruction was seated higher up in the bowels, there still being an absence of pain at the seat of hernia. After making an unsuccessful attempt to reduce the hernia by taxis, I returned to town.

On Friday the 14th, the patient remained in the same state, stercoraceous vomiting continuing every ten minutes. He still refused the operation. All nourishment, in the form of beef-tea, brandy, &c., was rejected as soon as taken. Dr. Kavanagh resorted to the injection of oil, but without success, the oil being immediately rejected.

On Saturday afternoon the 15th, I saw him again in consultation with Dr. Kavanagh. The patient was then in an extremely exhausted condition, beef-tea and brandy being rejected as soon as taken; pain still continuing over the central and upper part of the abdomen, and absent at the seat of hernia. The abdomen was tense, and there was tenderness on pressure, but this did not exist in any marked degree in the neighbourhood of the hernia, so that the patient still held to his opinion that the obstruction was higher up in the abdomen. After a conference had been held with the members of the family, a very reluctant consent might have been wrung from the patient, but his wife still obstinately objected; and as, from the extreme exhaustion and abdominal pain, little hopes of success could be held out to the family, the operation was not performed, and I had no expectation of seeing him alive again.

On Sunday the 16th, I saw the patient again with Dr. Kavanagh, and was surprised to find that the hernia had been spontaneously reduced in the night (about 2 a.m.), and that the bowels had been copiously relieved. The patient was in a very exhausted condition, but free from abdominal pain and tension, and he had been able to retain a considerable amount of nourishment, having taken as much as half-a-pint of brandy and two pints of beef-tea.

In explanation of this extraordinary recovery, Dr. Kavanagh informed me that, seeing the apparent hopelessness of the case, he again resorted to the plan of injecting large quantities of oil. On the Saturday night, between eleven and twelve o'clock, he slowly injected into the bowel, by means of a long tube, nine or ten inches in length, two quarts of olive-oil, three ounces of castor-oil, and three ounces of turpentine mixed together. The effect of this was that, about 2 a.m., the hernial tumour receded completely, and between three and four o'clock the bowels were copiously relieved; beef-tea and brandy were now retained on the stomach. The patient remained in an exhausted and drowsy condition for some hours.

From this period, the recovery was rapid, and in a week he was able to resume his business avocations. He has worn a truss ever since, and is now in good health.

Dr. Kavanagh informs me that in three other cases of intestinal obstruction, accompanied with stercoraceous vomiting and intense abdominal pain, but without external hernia, he has successfully adopted the same practice of persevering with the injection of large quantities of olive-oil, mixed with castor-oil and turpentine. In one of these cases, the symptoms had existed eleven days before he was called in; and the success was complete. In all the cases, the injections were not retained at first; nevertheless, they were repeated at intervals, and at last were retained; and to this steady perseverance no doubt much of Dr. Kavanagh's success in these cases has been due. —*British Medical Journal, Dec.* 26, 1874, *p.* 809.

51.—A CASE OF STRANGULATED HERNIA SUCCESSFULLY TREATED BY PNEUMATIC ASPIRATION.

By Dr. J. P. **Bramwell**, Visiting Surgeon to the Perth Infirmary.

[The patient was an engine driver, aged 50. Strangulation had existed about fifteen hours and the symptoms were urgent. Reduction, even under chloroform, was found to be imposible, and it was determined to aspirate the hernia, and if this failed to operate.]

With Dr. Nairne's consent I now proceeded to aspirate the hernia, which was very tense, elastic, and of considerable volume. The "previous vacuum" having been formed, a No. 2 needle (Dieulafoy's) was thrust at right angles to and well into the sac; on turning the tap about two drams of serous fluid and bubbles of gaseous matter were drawn into the instrument—a sure proof that the bowel had been perforated. The aspirator was now emptied and again set, and the needle drawn somewhat outwards. This change of position evidently placed the point in the hernial sac, out of which was drawn from four to five ounces of sero-sanguineous fluid. The tumour suddenly collapsed, and on manipulation the hernial protrusion was found to have disappeared. A full dose of opium was administered, and nothing allowed till morning, except a little iced water. First morning after operation: There has been some vomiting, and the epigastrium is tender on pressure. A small blister was applied to the part pained, and half a grain each of calomel and opium given every six hours. Second morning: Vomiting gone, pain greatly diminished. To have an enema of turpentine and castor-oil. After this he had two free movements within six hours, which relieved him in every way. Feels hungry now, and is able to take light nourishment. Third day: All abdominal symptoms gone, patient convalescent, bowels have moved spontaneously. He was fitted with a good truss, and, in a few days, was able to resume his employment.

Remarks.—Judging from the archives of surgery, reduction of strangulated hernia by pneumatic aspiration is as yet quite a rare operation on this side of the Channel. In the last two volumes of the Sydenham Year-book I have searched in vain for a single recorded case; the only approach to the operation being acupuncture of an inflated hernial gut, by Mr. Bryant. This, however, is not aspiration. Why an operation, the value of which has been proven in the most incontrovertible manner in France by many different surgeons, which has thoroughly established itself there, and yielded such splendid results, should be so little practised in our own country, is hard indeed to explain. This is all the more to be regretted when we consider how fatal an operation is that which is usually performed for the cure of a strangulated hernia. According to Brun-Buisson, half the cases operated on in France proved fatal. In 171 cases which I have collected from London hospital reports, the mortality was 46 per cent. Professor Spence has had admirable results—only 26 deaths in 127 cases; but even this gives 20 per cent. of fatal cases. Let us contrast this with Dieulafoy's recorded cases, operated on by the aspirator, where the death-rate was only 15 per cent.

With such facts as these before us, it becomes a very serious question indeed, whether any surgeon is warranted as a rule in performing the old operation for hernia, before having tried the simpler and safer plan of aspiration. The one, if not sufficient, does not preclude the use of the other. It has been said, with much justice no doubt, that the chief cause of death from operations for hernia is that the procedure is too long delayed, and the bowel thus irreparably injured. No doubt this is often the case, but I have seen enough of the operation to convince me that it has inherent dangers, apart altogether from the condition of the contents of the hernial sac.

Besides all this, we do know that a hernial protrusion which has resisted all attempts at reduction by taxis at one time, may some hours after be found reducible, and hence the reluctance to use the knife, knowing its dangers; but the safety with which the aspirator can be used would encourage us to resort to early operative interference of this simple nature, while we might shrink from the responsibility of using means of a far more risky character.

Even the warmest advocates of aspiration in hernia do not pretend that it is of universal applicability. Its use will not tend to the reduction of a strangulated epiplocele, but can we always be certain with what we are dealing in such circumstances? Better give the patient the benefit of the doubt, and then operate in the usual manner if there is no reduction. Neither will it suffice *per se* to reduce herniæ complicated by bands of adhesion; but its use will, by reducing the size of the gut protruded, make the ulterior cutting operation easier. In a very small hernial knuckle, such as is not unfrequently found in the femoral region, little will be achieved by aspiration. With these exceptions, there is abundant proof that the process is of wide applicability, and eminently useful for the reduction of herniæ resisting all efforts at replacement by taxis even when aided by chloroform freely administered. There can be little doubt that the general use of the aspirator would in such circumstances save many a useful life, which is sacrificed by the continued employment of a very dangerous operation for one incomparably safer and easier of performance.—*Edinburgh Medical Journal, Dec.* 1874, *p.* 500.

52.—CASES IN PRACTICE OF ILEUS AND STRANGULATED HERNIA, TREATED BY OPIUM—THE CASE OF ILEUS ALSO TREATED BY PUNCTURE.

By J. W. MARTIN, Esq., Portlaw.

In the year 1863 I wrote a short article on ileus, which appeared at the time in the Medical Press. I then said—"In many cases it is difficult, in most impossible, to form an accurate diagnosis of the cause of obstruction; our treatment must therefore be, in a great measure, empirical. This being the case, we should adopt that course of treatment most likely to prove serviceable in the greatest number of cases. This appears to me to be the early and steady administration of opium." I then had twenty years' experience of the advantages to be gained by this plan of treatment, at that time not generally adopted. Twelve years since have confirmed me in my good opinion of its value; indeed, at one time, I had the outlines of a *brochure* on the subject drawn up, intending to publish it; but, walking into Messrs. Fannin and Co.'s shop in Grafton-street one day, with my mind hot on the subject, I found myself forestalled by Brinton's very valuable little posthumous treatise on the subject, which contained all I had to say about it. Since then I had two or three cases, in which, having given opium freely for some days, the action of the bowels was induced by the use of enemata, containing several ounces of recent oxgall diluted with warm water.

The following case will be of interest, showing, as it does, that there are other measures which may be adopted with advantage, in addition to the foregoing.

I was sent for to a neighbouring village to see a man, aged seventy-five years; he had been attacked with colicky pains four days before, for which he had been treated with active aperients and enemata without producing any action of the bowels; the pain had increased; the abdomen had become much swollen and tympanitic; his countenance anxious; some vomiting; pulse 120, small, irregular; and he insisted that he was dying.

I introduced the O'Beirne's tube for twenty-eight inches, not only without difficulty, but also satisfying myself that, in this case at all events, it passed the sigmoid flexure; some flatus escaped; I threw in an enema of turpentine and oil mixed in emulsion. On withdrawing the tube an effort was made at expulsion, but without success. I introduced the tube again, and pumped out part of what I had injected, mixed with fæcal matter, but no relief was obtained. I then determined to puncture the distended bowels, and did so with a fine trocar and canula, about two inches below the ribs, on a line with the left nipple; much flatus escaped, but the tube at last became stopped with feculent matter. I then repeated the puncture about two inches more towards the linea alba with similar results. There was almost immediate relief from the extreme suffering, and one-third of a grain of morphia given subcutaneously procured some hours sleep; the dose was repeated by the mouth at night, and next morning there was free action of the bowels.

Visiting him six days afterwards I found him comparatively well, but suffering from diarrhœa, for which I prescribed an astringent chalk mixture, with laudanum. Yesterday, twelve days after, a neighbour of his told me he was quite well. There was not the slightest suffering or mischief from the puncture. I should say that I took care, by compression, to keep the peritoneal surfaces in contact while the instrument was penetrating the bowels. This case leads me to make some remarks on the value of opium in cases of incarcerated hernia.

In a paper I wrote on the subject some years ago—I cannot recall to mind in what periodical or at what date—I drew attention to the practical distinction to be made between strangulated and incarcerated hernia. I would now again address myself to the point.

A sharp line of distinction cannot be drawn, but tact, attention, and practice, will enable us soon to settle approximately the symptoms which should decide us on either proceeding promptly to operation, or adopting other courses with a view to promoting the return of the hernia. I would say that, if the patient be young and healthy, the hernia recent, small, tense, and painful to the touch, with the abdomen hard, and either retracted or distended and tympanitic, prompt operation is the safest remedy. But in the aged —when the hernia is large and of long standing—when, if a truss has not been worn, the parts have had time to accommodate themselves to the abnormal state, or, when a truss being worn, a large mass suddenly protrudes; when handling gives but little pain or suffering—in such, I think, other remedial measures may have fair trial. The warm bath, if convenient, or, what I prefer, large hot fomentations, and a moderate trial of the taxis, preceded by a large dose of opium—I prefer this to either chloroform or tobacco.

In the Medical Press, 1863, I published a case in which I was successful in reducing a badly incarcerated hernia, under the influence of opium, being the third case in which I had used it successfully. The following cases have also occurred in the course of my practice.

J. A., aged fifty-eight, a stone-mason, has had a right inguinal hernia for several years, for which he wears a truss, but, from the nature of his employment, lifting heavy weights, it sometimes protrudes. A year ago it became incarcerated, but, after a moderate dose of laudanum, was easily reduced. On this occasion, when lifting a heavy stone, the hernia came down, and he could not reduce it. Having been away from home most of the day, I found, on my return in the evening, that my assistant had been sent for three hours before, had tried the taxis, and, finding he could not reduce it, gave 25 drops of Battley's sedative. On visiting him I found the hernia about the size of a goose egg, and the patient suffering great pain. I tried the taxis again, patiently, for nearly an hour, when I made up my mind that the case would require operation. Not having had dinner, I gave him 40 drops more of Battley, and went to have some refreshment, and prepare the requisites for operating. On returning, after an hour, I again tried pressure, and had not the hernia five minutes in my hand when it returned easily, and all went well.

I was called about 3 a.m. to see J. F., aged twenty-five, delicate of frame and constitution. He had a left inguinal hernia, for which he habitually wore a truss by day, but left it off at night. On this occasion, during a fit of coughing, the hernia protruded, and, becoming painful, he sent for me. I found him in great agony; his pulse sharp and rapid; countenance anxious; the hernia had been down four hours, and felt tense; he had vomited once. I tried the taxis, got him into a hot bath, and there repeated the attempt to reduce it, but without making the slightest impression upon the swelling. I then determined to have recourse to the operation, and wrote to a friend to come and assist me; but as he could not reach me for four hours, I gave two grains of opium, and directed one to be taken every hour, keeping up a hot fomentation with flannels and impervious cloth. When my friend arrived, four grains of opium had been taken. He suggested chloroform; and I was about to leave the house to procure it, when the hernia receded under the slightest pressure of his hand. We applied his truss; his bowels responded to a dose of black draught, and he recovered rapidly.

Two years ago I was called at midnight to visit a small farmer, about four miles from my residence. He was aged seventy-five; wore a truss for an old inguinal hernia, which had come down on the previous evening, and not being able to reduce it, as he was used to do, it became painful; colicky pains set in, and he felt very ill. Having been apprised of the nature of the case, I brought my son, Dr. John Martin, with me, and the necessary articles for an operation. I found the man suffering greatly; the hernia of very large size; solid, as if containing omentum, and tender to the touch. I first threw in one-third of a grain of muriate of morphia under the skin, and tried the taxis, but without success. I then applied the ether spray, which produced great contraction of the skin and loose structures; but two hours passed without making any impression on the hernia. I then threw in half a grain of the morphia subcutaneously, and, waiting for half an hour, again tried the taxis, which was very speedily successful, and the patient made an excellent recovery.

A few years ago I was requested by a *confrère* to visit a patient in the Poorhouse Hospital under his care, on whom he meditated operating for the relief of an incarcerated hernia, but for which he was strongly advised by a mutual medical friend to try the opium treatment. I found the patient to be a wretched object, vomiting constantly; abdomen tumid, but not tense, and the hernia bore handling well, not being at all tender; still the taxis made no impression on it. Feeling satisfied that it was not strangulated, I, too, voted for the opium treatment, and he was ordered a grain every four hours, frequent enemata of warm milk and broth, and hot fomentations to abdomen and hernia. This line of treatment was continued for eleven or twelve days, when the hernia receded spontaneously; the bowels acted after having had no motion for fourteen days; and the patient recovered so rapidly that he left the house four or five days afterwards quite well.

What became of the eighty or ninety grains of opium he took? for he showed no sign of narcotism all through his illness.—*Dublin Journal of Medical Science*, *Nov.* 1874, *p.* 382.

ORGANS OF URINE AND GENERATION.

53.—CERTAIN DIFFICULTIES IN THE PERFORMANCE OF SYME'S PERINEAL SECTION.

By **Edward Lund**, Esq., Surgeon to the Manchester Royal Infirmary.

[It is often a matter of extreme difficulty to pass the catheter in the operation of perineal section, or to replace it a few days afterwards. The operation should be confined almost entirely to cases of old undilatable stricture of the urethra, in which the tissues about the perineum are the seat of much chronic induration, with perineal, scrotal or penile fistulæ.]

When in our preliminary examination of these cases we detect albumen in the urine, it is often difficult to decide whether it is derived from muco-pus from the bladder, or has been secreted by temporary congestion of the kidneys, or whether it be indicative of positive structural change in these organs. I have for a long time taken as my guide in these cases the specific gravity of the urine, where it is posible to estimate it from the daily average, unless the presence of renal casts or oil-globules should give unfavourable indications, and before proceeding to operate I collect the whole secretion of twenty-four hours, and judge from it as to the specific gravity. If, together with the presence of albumen, there be a constantly low specific gravity, say, never reaching above 1·010, the patient not taking more than the average quantity of fluid per day, I should look with great suspicion on such a case, and feel very indisposed to proceed to operative interference. If, however, the albumen were in the same proportion in another case, but the average weight of the urine passed per diem was from 1·015 to 1·022, I should have no hesitation in dividing the stricture. It seems to me that the dangers we have to fear in diseases of the kidney, viewed in the light of surgical operations, arise not so much as might at first appear from debility consequent upon continued loss of albumen, as from the risk we run that, while the patient is suffering from the shock of a recent operation, the kidneys, influenced like all the other glands in the body, through the sympathetic system, suddenly cease to secrete from the blood those matters which they ought to eliminate in such proportion as must be compatible with life. For, in such cases, even before the operation, as proved by the low specific gravity of the urine, the quantity of matter secreted was at the minimum, and therefore these secreting powers being still further diminished, the kidneys fail to remove a quantity sufficient for the continuance of healthy function. For in such cases is it not the accumulation of urea in the blood more even than the sudden cessation of flow of urine which are the gravest of all symptoms with which we have to contend ? And is it not then that we observe slowly yet surely creeping over our patient a confusion of intellect with that passive apathetic state which so quickly terminates in coma and in death ? Thus, as I have already said, next to the structural change which necessitates an operation for division of the stricture, the amount of induration around the urethra, the numerous fistulæ, and the continued trouble produced by the abnormal passage of the urine—above all these things, we must consider the condition of the kidneys as determining whether or not the operation of perineal section should be performed.

In order to prepare the urethra for the passage of the director at the time of the operation, which it is essential should be accomplished in this form of perineal section, and when it is impossible, by reason of the smallness of the stricture or the presence of numerous false passages, to pass a fine bougie or catheter into the bladder, I have found it an admirable practice for a week or ten days previous to the operation to desist entirely from any such attempts, and to adopt the plan which, I believe, was advocated by the eminent surgeon who designed the operation I am discussing, viz., no longer to use a small instrument, but to proceed at once to dilate as fully as possible the whole of the urethra in front of the stricture, and there to establish a dilated condition of the passage similar to what we know must exist in the urethra behind the stricture by reason of the pressure of retained urine. I begin with as large a bougie as can be fairly passed along the passage, not being satisfied with less than No. 8 or 10—if possible a larger than this—and pass it each day down to the face of the stricture, holding it there for ten or fifteen minutes. If, after two or three such applications, it passes a greater distance as if the urethra were expanding on the anterior side of the stricture, I would then for the remaining few days use a still larger size. I believe this has a very beneficial effect; it so separates the sides of the passage as to draw the mucous membrane away from the strictured part of the canal and enlarge the little orifice, which must still be present at the end of the *cul-de-sac*, like a hole in the bottom of a cup. When the time arrives for the operation, and everything else has been prepared, it becomes the duty of the surgeon or his assistant, to introduce the Syme's grooved staff, in which it will be remembered one part is made extremely small, equal in the curved portion to a No. 2 or 3 catheter, the shaft of the director being equal to a No. 8 or 10. As soon as the instrument is brought down to the face of the stricture, with the urethra prepared by extreme dilatation, it is wonderful to notice how readily, in most cases, a urethra which ten days previously would not permit in any way the passage of a small catheter will now receive the narrow portion of the director, and we may slip it on through an indurated stricture into that wider portion of the canal which leads to the bladder.

It becomes necessary for either the surgeon or his assistant to introduce Syme's director; and here it is of the utmost importance that we should be quite certain that the point of this instrument really passes into the bladder; for only those who have had experience in this procedure can bear testimony to the extreme difficulty, which sometimes arises, in being quite sure, whether or not, the director has taken the right course.

I believe although we may be satisfied that the point of the director is in the prostatic portion of the urethra, as we can prove by examination through the rectum, yet it may have travelled along some false passage in the prostate itself, which some previous catheterism has unfortunately produced, and having thus pierced the prostatic tissue its point may project up into the cavity of the bladder. The question thus arises, Will such a state of things be a bar to the progress of the operation ? Although I am willing to admit it would be only in exceptional cases that he should overlook such a condition, from cases which I have seen, yet I know it is possible that the operation may be brought to a successful issue even though the beak of the director be in this abnormal position. The usual test, that the point of the instrument lies loose in the bladder, of course is, that, while we can only feel it per rectum through the dense tissue of the prostate, we can rotate it easily on its own axis from side to side, and so prove that the apex is free to move within the bladder. The most important thing to determine is that the point of the instrument, after passing through the membranous portion of the urethra, has not diverged either to one side or the other, or more likely backwards or downwards into the loose tissue between it and the prostate or the rectum. Here, of course, it would be appreciable to the touch of the finger when examined by the bowel, and in such a case on no account should we proceed with the operation. The only exception, therefore, which I have allowed to the rule that the operation is not to be proceeded with unless the point of the catheter moves freely in the bladder, is in those rare cases where, as I have just said, we have reason to think it has entered an old sinus in the prostatic portion and there become in some degree fixed. The instrument is now given into the hands of the assistant, to be held by him in somewhat the usual position of the staff in lithotomy (only placed so that the groove may point directly towards the operator, not in any way giving it a lateralised direction), and the operator has to satisfy himself that the curve of the director or the thick portion of its stem can be felt deeply in the middle line of the perineum. If there be much induration this will be impossible in many cases ; and it is therefore imperative on the operator to proceed in a very cautious manner in his first incisions. My plan has always been, and I first learnt it from the late Mr. Dumville—who for many years enjoyed a well-earned reputation for the special performance of this operation; and no one whom I have seen accomplished it more rapidly or with better results—to make my first incision from above downwards exactly in the middle line of the perineum; not by plunging the knife into the perineum in front of the rectum, and then cutting forwards as some surgeons have recommended.

In the selection of the knife for this purpose I have found it is far easier to do it with a long narrow-bladed knife than with a broad one. The knife I always use is what is known as a finger knife, with a blade not much more than a quarter of an inch in width, and from two to two and a half inches in length. It is true that the cutting surface of such a blade is not needed for more than one inch from its point, and that its length may seem to be unnecessary, but the advantage of the long narrow blade is that, while it lies by the side of the index finger which guides it in the deeper portions of the incision, it does not conceal the view, whereas, with a shorter and wider one, of the ordinary scalpel form, the blade, as well as a portion of the handle, might be buried in the wound. It is generally needful to make more than one cut in the middle line, beginning about one inch and a quarter in front of the anus and continuing it backwards about an inch. As I proceed I seek, from time to time, for the director in its cylindrical or its grooved portion, and it is very important to take care that neither by habit, as in the operation for lithotomy, nor by mischance, we do not, when the moment arrives for opening the urethra, cut into it on the side, instead of on its front aspect exactly in the middle line. It is want of care here which I think often leads the operator to slip by the side of the small portion of the director, and thus to miss the true position of the groove. As soon as, guided by the nail of the left index finger, I can make out any portion of the groove, I follow the plan which Mr. Dumville so often referred to, viz., that while up to this time the knife has been used with its back upwards and towards the operator, and is still held in the groove in which we are sure it is fixed, by the inability to move it from side to side, it is now made to turn round upon its point until the edge of the blade points upwards, and then by carrying the handle well backwards (having taken care that the pelvis of the patient hangs well over the edge of the table), the point can be made to travel along the groove of the staff, and cut the urethra just at that part where the shoulder of the cylindrical portion can be felt. It is very often difficult to do this, but the difficulty, I think, depends upon the way in which the knife is held. It is not an easy thing to run the point of a knife such as I select, along the groove of the steel director of which we are now speaking. Whether or not it is because the knife blade is of hard steel and the groove in the director of softer metal, yet so it is, that they are very apt to stick or hang together if we allow the point of the knife to impinge upon the surface of the groove at anything like an obtuse angle. But the more nearly the blade of the knife is placed parallel to the groove in the staff so will it travel along with increased facility. Mr. Dumville used to boast that in this peculiar method of turning the knife round while the point rested in the groove he had broken the point of many scalpels, but he said that by this means he had rarely failed to retain the knife in the groove when he had once fairly entered it. Having in this way divided that small portion of the urethra which is close to the cylindrical portion of the director, we can generally tell, by the ease with which the director passes on, that we have overcome the obstruction, yet very often it will be needful to turn the knife again with its cutting edge towards the rectum and slowly to drive it along the groove.

Here, again, the great advantage of a narrow-bladed straight knife, having its back and cutting edge parallel to each other, will be apparent, for with it we can so nicely regulate the amount of tissue which we wish to divide, and holding the knife in the position described above, we can slide it along the groove and push it within the bladder, while from the narrowness of the knife-blade it cannot divide the prostate to any dangerous extent. At this stage of the operation, and as soon as the cylindrical portion of the director can be passed onwards, we can also pass the finger, if not quite into the bladder, at any rate into the dilatable prostatic portion of the urethra, and thus be quite sure that the entire passage is laid open. But there are cases in which we cannot do this, and it is difficult to explain why it should be so, except upon the supposition that the narrow portion of the director is held in the prostate. It now becomes necessary to follow some positive plan by which we may be sure that we can introduce the catheter into the bladder along the divided urethra. My method is this—I have what I call a hollow probe, a small silver tube about six inches in length, to correspond in size with a No. 4 catheter, made at one extremity slightly bulbous, and at the other conical, so as to fit the mouth of a small india-rubber ball syringe, and provided at the time of its introduction with an ordinary silver wire stilette. I then take this hollow probe with its stilette, pass it by the perineal wound, and guide it either along the groove in the director, or by the side of it, until I believe it to be in the cavity of the bladder. But, to be quite sure of this, I remove the stilette, and if, as is generally the case, an ounce or so of urine has remained in the bladder, a small quantity of it can be forced through the hollow probe by pressure over the pubes, and this will demonstrate the true position of the instrument. If this should fail, I inject by the probe two or three ounces of warm water, and then making pressure on the pubic region, the water will flow back in a continued stream through the tube. Having thus demonstrated to the satisfaction of myself and those who are assisting me that the probe is thus placed, I direct my assistant to remove the grooved director. I then take a silver director of rather a peculiar form, being about equal to one third of a cylinder, the diameter of which would correspond to a No. 15 catheter. This is provided at one end with a small handle about a square inch in extent, fixed to it at an angle of about 135°, and at the other end it is made perfectly smooth, but, unlike most directors, not at all spoon-shaped or lipped, being, as I have said, the section of a true cylinder. This instrument I can slide with the greatest ease by the side of the hollow probe, and pass it into the bladder without any difficulty, if in its passage it be held with its edges forwards and backwards. As soon as it has entered the bladder, and is turned round that its concavity may be directed forwards, it will dilate the wound and cause the expulsion of any remaining quantity of water or urine that may be still in the bladder. This will give another proof that the director also is within the bladder. I then remove the hollow probe, and leave the director in its place, with its concavity fowards; and now begins that stage of the operation which I think those who have many times performed this perineal section will admit is often a very troublesome one, that is, the introduction of the catheter into the bladder, where it is to be retained for forty-eight hours, or a longer period. For reasons which I will presently explain I no longer use for this purpose the ordinary elastic catheter. I employ what I have styled an urethral tube, made of the same material as the gum-elastic catheters, corresponding in size to a No. 10, ten inches in length, sligbly conical at one end upon its exterior surface, and having six small holes in the first inch from that extremity. The way, or passage, through this urethral tube is perfectly straight and of equal bore throughout.

I have a wire from an ordinary gum-elastic catheter, No. 10 size, cut to such a length that when it is pushed as far through the urethral tube as the ring at one end will permit, it will project beyond it only a tenth of an inch or even less. I curve this wire in such a form as either to imitate the ordinary catheter curve, that of the prostatic curve, or the curve which is given by Sir Henry Thompson, to his No. 1 silver catheter, and I prepare to use one of these three curves, according to the requirement of the case, either by having three wires ready curved, on which I can place the urethral tube, or I curve each wire for the occasion. Having the urethral tube mounted on the wire which I have selected, the two are then in the usual way held firmly in the right hand, and passed down the urethra until the finger introduced into the wound tells me that the tube has passed into the divided portion. I now take hold of the silver director, which has been in charge of the assistant, and with that curious harmony which we know exists in the co-ordinated movements of the two hands, there is no difficulty in slipping the end of the urethral tube into the grooved surface of the director and carrying it on into the cavity of the bladder. If any difficulty should arise it is generally caused, according to my experience, by the same fault that occasions a difficulty in the passage of the knife along the groove in the director, that is, the end o the tube strikes the groove in the director too much at a right angle; it does not lie sufficiently parallel to the surface so as to slide along it, but it sticks upon it and will not move. This difficulty may be overcome either by using the urethral tube upon a wire stilette curved to a larger circle, which is the same as being more flat, or by tilting up the handle of the director, which is just outside the wound in the perineum, so as to cause the other end of the director to dip more deeply into the bladder and form a sort of sliding surface upon which the urethral tube can run. As soon as it is evident that the tube is in the bladder, which may be proved, if necessary, by removing the wire and injecting water along the tube, pressing the pubic region and causing the water to flow out in a good stream, I then, and not till then remove the director from the perineal wound.

Now, as to the best mode of fixing this urethral tube in the bladder. For this purpose I use a little screw catheter-holder such as is employed for holding elastic catheters, and so made that it will compress, by a screw action, a catheter of any size from 12 to 3, and with rings at the sides to which tapes can be attached. I take care to place this so far down the urethral tube that the tube may lie fairly within the cavity of the bladder. Then to keep it in the bladder, I adopt a plan for the general principle of which I am indebted to Professor Lister, who showed me while at Glasgow, many years ago, what he considered the best method for retaining a catheter in the bladder. It is this: to so arrange a system of tapes and narrow bandages around the pelvis that the catheter shall be tied to them and to the immovable pelvis as the patient lies in bed, rather than to either thigh or to the penis, which may be constantly disturbed in position. I take a broad bandage measuring, say, five inches in width and two yards in length; from the lower border of this I tear up a narrow strip at each end, about three quarters of an inch in width, to within four inches of the middle of the bandage. Then, to prevent this narrow strip tearing away too far, I cut with a pair of scissors a small hole in the bandage just above it, and pass the narrow strip through this, and once or twice over the edges of the bandage, thus fix it at that spot, so that it cannot slip. The bandage, thus torn, is then placed under the patient's body and tied round the abdomen just above the pelvis, uniting together the broad portions of the bandage. Then the narrow strips which hang down behind from each side of it are, it will be noticed, attached to the broad portion, at spots just eight inches apart, where they will lie on each side of the spine, under the patient. These are brought beneath the buttocks, on each side of the scrotum, and tied in the same way to the bandage through little holes in front just opposite to those behind, or still better, a little further apart, so that the narrow bandages in front will be at least ten inches interval. All these folds of the bandage are made just comfortably tight so as not to hurt the patient, and the object of having a fixed space between the small bandages in front and behind is to prevent them, as they are so apt to do, running together in the middle line just over the line of the wound, or the position of the anus. Then from the eyelets or rings of the catheter-holder strips of tape are taken and attached to the narrow bandage which runs up on each side to such a length as shall just allow a little play to the urethral tube in the urethra.

Lastly, to obviate the difficulty which most surgeons must have observed, of retaining a flexible catheter in the bladder where it is apt to curl downwards and in this way slip out, I have, as was also suggested to me by Professor Lister, followed his plan of taking a piece of the wire stilette of a No. 10 catheter, cutting it about four or five inches long, and introducing it into the urethral tube so as to keep that part of it stiff and straight. I convert the wire into a plug to stop the end of the urethral tube, by winding round it near to the ring a narrow piece of adhesive plaster into a conical form. This forms a plug which has to be removed each time the bladder is emptied, and it is not difficult to get a patient of ordinary intelligence to perform this operation for himself. I have lately substituted for this wire a piece of whalebone about nine inches in length, conical at one extremity, and this is to be kept in the tube in the same way as the wire, only, being pliable and elastic, it has this advantage over the wire, that it gives firmness to the whole length of the tube, whereas with the wire the tube beyond it often becomes bent and almost pierced by the point of the wire. All matters being thus arranged the patient may be pronounced in a fair position so far as accomplishment of the operation is concerned, but, as is well known, difficulties may occur long after the patient has left the operating theatre and is safe in bed. On the question of hemorrhage I have not much to say; thus far I have had no difficulty with it, and I have only known of one case in which it has been excessive after this operation. If needful I should not hesitate to plug the wound around the urethral tube much in the same way as we do the tube in the bladder for lithotomy, but so far I have never had occasion to carry this into effect.

I have seen so much trouble and difficulty from following precisely Prof. Syme's instructions to remove the catheter thus placed in the bladder after perineal section at the end of forty-eight hours, then to leave the patient to pass his urine as he can, and only introducing the catheter at intervals of two or three days:—I say, I have seen so much difficulty in this second introduction of the catheter that I have long since departed from the exact instructions of one for whose opinions in surgery I have so much respect, and I now adopt the following plan, by which it will be apparent why I use the peculiar form of urethral tube which I have already described. I leave the tube in the bladder just as I have fixed it for at least three days, or even longer if the flow of urine is free and there is every reason to be certain that the tube is rightly placed. Then, at the end of this time, perhaps five days from day of operation, for fear the holes at the sides of the tube should become obstructed by clots of blood and mucus or phosphates, I usually proceed to change the tube for a fresh one. This I do in the following manner: I have a long stilette made of whalebone carefully fashioned in its entire length of a size equivalent to a No. 2 catheter, of a cylindrical form, quite smooth, and rounded at each end. It is twenty-two inches in length, and at a spot ten and half inches from each end I have a mark made on it, either as a little groove carefully filed in it or still better a small white mark produced by fixing in the whalebone a fine plug of ivory. Unscrewing the holder by which the urethral tube is retained in the bladder, and cutting the small tapes which hold it, so that it can be removed entirely, but taking care that the tube is not displaced until all is ready, and standing on the right side of the patient, I hold the urethral tube firmly with the left hand. I then have the whalebone stilette well oiled, and pass it down the urethral tube, which it will be remembered is ten inches in length, till so much of the stilette has entered the tube as to bring it up to the mark, which is ten and a half inches from its end. Unless the urethral tube has become acutely bent in some part, and this can easily be done, I know that one half inch of the whalebone stilette will project beyond the end of the urethral tube, free in the bladder. With the right hand holding the whalebone stilette steadily some few inches beyond the urethral tube, and the right elbow resting firmly on the patient's right thigh, I draw, with my left hand, the urethral tube out of the urethra and slid it along the stilette until it is clearly disengaged; my right hand all the while keeping the end of the whalebone stilette still in the cavity of the bladder. Then, as soon as the other end of the urethral tube has emerged fairly from the urethra I seize the stilette close to the glans penis, and hold it there with the left hand; my assistant draws the old urethral tube away, and in its place puts a fresh tube, which should be softened with warm water to make it perfectly pliable, and well greased. This, in its turn, will slide down the whalebone guide, and the right hand once more taking hold of the stilette, so as to be sure that it is kept steadily within the bladder.

It is easy to understand how this second tube can be slid down without any risk of its showing itself in the perineal wound or failing to reach the bladder, and on the reappearance of the little ivory mark on the whalebone stilette we know that the urethral tube has got fairly beyond the end which is in the bladder. This is then fixed in the same way by the screw catheter-holder, tapes, &c. I repeat this process as often as I deem it needful to put in a new urethral tube, and, in some cases, I have kept the tubes in for several weeks in succession, changing them every four or five days as might be required, and thus secured a perfect healing of sinuses which had been the cause of all the trouble, and this without any of those risks, in failing to introduce the instrument, which I seek by this method to avoid. In spite of all my care it has on more than one occasion happened to me that about the second or third day after the operation the patient has got the urethral tube out of the bladder. One patient, an old man, deliberately untied the tapes and thought himself very clever in performing this facile operation without instructions.

Even up to so late a period as the tenth day after the operation I have succeeded in replacing the tube in the bladder by exactly the same process as was used in the first instance, and although at this time the wound in the perineum would seem to be very nearly healed, yet the patient being under chloroform, in the lithotomy position and everything else prepared, I found no difficulty in passing through the wound, which seemed to have become merely a sinus, the hollow probe into the bladder, verifying this by a careful examination through the rectum and by the crucial test of injecting water along it, waiting for a moment, pressing over the pubes, and having it returned in a good stream through the tube. This fact being established to the satisfaction of those who assisted me I could slide by the side of the probe the silver director, which has no lip or projecting edge at its end, to prevent it passing readily, and therefore travels along the incision like a blunted scalpel, reopens the wound, and turning it half round so as to have its concavity upwards, I could pass the urethral tube on the curved wire stilette, so as to bear upon the director and thus slide it into the bladder with the greatest ease, and from that day, in the case just referred to, as well as in other cases, no further difficulties were experienced. Whereas, on the contrary, I have known in cases of Syme's perineal section that the surgeon has been compelled at last to desist from any further attempts to pass the catheter where it has unfortunately slipped out, or had been removed by reason of having no guide for its reintroduction which can compete in simplicity and certainty with this plan of sliding the tubes along the whalebone probe. After three or four weeks or even earlier, when the sinuses which have preceded the operation have ceased to discharge or are entirely healed, then the urethral tubes can be discontinued, and a catheter passed from time to time in the ordinary way. If the perineal section of Professor Syme be reserved for those cases, and those only, of chronic indurated urethral stricture with sinuses and with an almost impervious passage, the great advantage to be gained by the successful issue of such cases will, I think, more than compensate for the risks which it may be assumed are inseparably connected with this operation; but which, I think, may be much diminished in intensity by following out the system of operating and the details of treatment which I have ventured to particularise in the foregoing remarks.—*Liverpool and Manchester Medical and Surgical Reports,* 1875, *p.* 109.

54.—ON THE TREATMENT OF ORGANIC STRICTURE OF THE URETHRA.

By Thomas Annandale, Esq., F.R.S.E., Surgeon to the Edinburgh Infirmary.

[In a previous part of this paper the writer describes the symptoms and diagnosis of stricture of the urethra. We give his observations upon the treatment of the disease.]

I will consider the following three varieties of this condition: 1. Simple uncomplicated organic stricture; 2. Organic stricture with constantly recurring spasm or contraction; 3. Organic stricture complicated with—(*a*) retention of urine, unrelievable by the catheter; (*b*) obliteration of the urethra; (*c*) urinary infiltration, abscess, or fistulæ; (*d*) calculus in the urethra or bladder. There being no known certain and permanent cure of an organic stricture of the urethra, we must endeavor to use those methods of treatment which afford relief for the longest period, and which have been proved to be the safest in their application. As a most important assistance in any operative treatment, it is essential that the patient's general health be carefully attended to, and especially that the state of the kidneys and urine be investigated, and any abnormal condition, if possible, remedied.

A troublesome symptom in connexion with the treatment of this disease is the occurrence of rigors in some instances after the slightest interference, such as the passing of a bougie or catheter. The administration of quinine I have found very valuable in checking this symptom; and by giving five or ten grains of this drug two or three hours before the instrument is used, the rigor will often be prevented altogether or much modified. If the rigor does occur, a second dose of the quinine will certainly relieve it or lessen its intensity.

Let us now consider what treatment is most beneficial in the *first* variety I have mentioned. Gradual dilatation, such as is accomplished by the passing of bougies at regular intervals, is, in my opinion, the most satisfactory method of treating uncomplicated organic stricture, as regards both its safety and the duration of the relief which it affords.

In carrying out this method, I must express my strong conviction that the employment of metal bougies is to be preferred to instruments of a softer material. This point is a disputed one, for some eminent authorities advocate the use of the softer instruments; but my own experience is in favour of the metal bougie, care being always taken to use this latter instrument gently, and with the remembrance that such an instrument will, if roughly or improperly handled, do much injury. In carrying out gradual dilatation, the instruments should be passed at intervals of two, three, or four days, according to the amount of irritation which follows the proceeding; and it is often a useful assistance to have the bowels opened by some mild laxative or enema on the morning of the operation. In treating very tight strictures it is best to employ in the first instance a small catheter in preference to a bougie; and if there is any difficulty in introducing the instrument it should be tied in for twenty-four or forty-eight hours, and the dilatation with bougies commenced the day following its removal. Holt's, Thompson's, and the other methods of immediate dilatation or rupturing the strictured urethra or structures surrounding it (the instruments for which you see here) may be employed in this class of stricture; but my experience is that recontraction follows all these methods much sooner than when the gradual dilatation is employed; and that therefore, unless it is of consequence that the stricture should be quickly dilated, it is better to take a little more time and cure the condition more effectively by means of the bougies.

The *second* class of organic stricture is one always most troublesome to the surgeon. Gradual dilatation has only a very temporary effect in cases of this kind; and if this treatment and a careful attention to the general condition fail to relieve the patient, I have no hesitation in strongly recommending the operation of internal division, as I have found it the most efficient in relieving this form of stricture. The instrument which I have used for the last five years is the one which I show you. I obtained it from New York, and you will find it figured in Dr. Gouley's recent work on this subject. This instrument is, in my opinion, the best which has yet been suggested, and the results obtained with it have given me the greatest satisfaction.

After the stricture has been incised, the urine should be drawn off regularly twice a day with a No. 10 or 12 catheter for the first three or four days, and after this a No. 10 bougie should be passed at least once a week for two months. Holt's or Thompson's instrument may be used to forcibly stretch this class of stricture, but my observations have taught me to prefer internal division because it gives more decided and lasting relief.

The *third* class of strictures is most effectually treated by the operation of external division; for it is only in this way that many of the complications can be got rid of. If the complication is not excessive, as in the case of a fistula without much thickening of the surrounding textures, gradual dilatation should be first tried, and may prove successful; but in all cases where the complication is a serious one, or when other methods have failed, external division is a most valuable and successful method of treatment, and should be employed if the patient's condition admits of an operation.

The staff suggested by the late Mr. Syme is a most useful instrument in experienced hands, but there are cases in which this instrument cannot be used satisfactorily. For instance, when a portion of the urethra is obliterated, or when there are numerous false passages, this instrument is useless; and a much more successful proceeding is to introduce a full-sized bougie or catheter, and, having passed its point down to the stricture, to open the urethra immediately anterior to it, expose the strictured part, and divide it on a director or by passing the knife on in the direction of the urethra. After the operation a No. 10 silver or elastic catheter should be fastened in the bladder, and retained there for three days. After the withdrawal of the catheter a No. 10 bougie will be passed regularly twice a week until the wound is healed, and for at least two months longer. If the complication depends upon the presence of a calculus in the urethra, this operation will admit of its being removed; and if the stone is lodged in the bladder, and not of very large size, it can also be removed by carrying the incision backwards, through the membranous part of the urethra.—*Medical Times and Gazette, December* 12, 1874, *p.* 653.

55.—PROFESSOR DOLBEAU'S OPERATION FOR STONE IN THE BLADDER.

By Dr. William Ewart.

Little notice has hitherto been taken in this country of a new operation for stone which has been practised with good results in Paris for the last ten years, and is slowly gaining ground, not in France only, but across the Atlantic. Having lately witnessed it at the Hôpital Beaujon, I thought that an account of what I had seen would prove of interest. This operation is, in reality, a revival of the old Marian method, with the novelty that Mariano Santo's ideal, never realised by himself nor by his followers, has now been carried into practice. "A small incision, much dilatation," was his precept; but in the days of the apparatus major, though the wound was small, the dilatation was faulty, being together incomplete and excessive, acting in one direction only, and with violence. These defects are absent from Professor Dolbeau's operation. He has devised the means of forming by simple equable compression of the tissues the passage that formerly resulted from their laceration. But the neck of the bladder, even dilated to its extreme limits, will not afford room for the extraction of any but the smallest calculi. Hence the necessity of crushing previous to removing the stone, and the name of "perineal lithotrity" given to the operation.

The instruments used are few; a scalpel, a screw dilator, a crushing forceps, and various-sized seizing forceps. The essential feature in the screw dilator is that the blades keep parallel in every stage of their expansion, forming together a cylindrical body, the diameter of which varies with the action of the screw. At rest, the six smooth blades or columns are in apposition, and run up to a common point. They conceal two balls capable of moving up and down along a central stem, and of separating the columns more or less without causing them to diverge. The expanding portion of the instrument measures 8 centimeters in length, 1·2 c. in its smallest diameter, and 2 c. in its largest; the limit of distensibility of the neck corresponding to a diameter of 2·4 c., according to Professor Dolbeau's experiments. The forceps are intended to break, not to crush, the stone, and for that reason are called "cassepierre." They possess great power, and their ingenious construction enables them to be opened, after their insertion through the wound, without any divergence of their limbs taking place in the thickness of the perineum. A good description of these two instruments is to be found in Professor Dolbeau's book "La Lithotritie Périnéale."

The patient is placed in the usual lithotomy position. The lower limbs are entrusted to two assistants; a third (whose office is responsible), taking charge of the strongly bent and deeply grooved staff: his duty is to keep it strictly in the middle line, to make its curve project in the perineum, and later to resist the pressure of the point of the dilator. The incision, two centimeters in length, is made with the blade upwards, and begins immediately in front of the anus, at the brown zone marking the passage of skin into mucous membrane. A deeper incision opens up the perineal fascia, through which the knife, guided by the left index-finger, is thrust into the membranous portion of the urethra. The work of dilatation now begins, and from the amount of care with which it is accomplished depends in a great measure the success of the operation. Four successive dilatations are employed by Professor Dolbeau. The first stretches the external aperture and the subcutaneous tissues. The instrument is next closed, and passed up to the groove of the staff and firmly pressed against it whilst the expanding screw is being turned—a proceeding that causes the whole of the membranous portion to slit up along the line of incision. The instrument can now be pushed one step further along the staff, which the assistant slightly depresses. As soon as the membranous region has sufficiently yielded to this third dilatation, the dilator is closed and pushed onwards into the neck of the bladder, the staff is withdrawn and the screw cautiously turned until expansion is complete. The passage thus formed is of uniform calibre, and has smooth walls. This can be felt by the finger in the dead subject. In the living Professor Dolbeau deprecates the use of digital examination. The stone is now within easy reach, and if very small will be removed by the light forceps used in making the first exploration after removal of the dilator; generally, however, it has to be broken up by the cassepierre. This is introduced without any great difficulty, and, thanks to the broad blunt beak in which it terminates, it obtains an easy grip even of the harder and smoother concretions. Large stones cannot be clasped, but will usually yield to the repeated bites of the instrument. The fragmentation of the stone is often very great; and to extract everything, even with the help of injections, is a task requiring much patience. Before the patient is released from the lithotomy posture, a catheter is always introduced, through the natural channel to obtain a crucial proof of the bladder having been cleared.

The after-treatment is simple: the obvious indications are rest and apposition of the thighs, with partial flexion of the thighs and legs. A sponge placed in front of the small perineal slit generally suffices to collect the discharge. The urine is drawn twice a day. It ceases to drop through the wound after a very few hours, and the opposite condition of retention from spasm of the neck is not uncommon. In the majority of cases twelve to sixteen days suffice to close the wound perfectly. In a few union has taken place by the first intention. If we look at the tabulated results of the operation we find nothing very different from the returns of most lithotomists; one death in six cases. But it is contended that in Professor Dolbeau's practice the subjects were unusually unfavourable. For the first few years after its introduction perineal lithotrity was only tried where no success was expected of the ordinary means of treatment, and among the deaths that followed many were clearly inevitable.

Professor Dolbeau brings forward some strong arguments in favour of perineal lithotrity. The loss of blood is trifling, and seldom exceeds two or three teaspoonfuls; the wound is minute—two important considerations in dealing with old age and albuminuria. The bulb is out of the way of danger, and the rectum is not seriously imperilled. The grave surgical complications of pyæmia and of urinary infiltration have been hitherto unknown in Professor Dolbeau's practice. In none of his cases did the prostate resent the pressure to which its tissues had been subjected; and the neck of the bladder always escaped rupture or overstretching of its fibres. One of the most important elements of success in Professor Dolbeau's treatment is certainly the fact that patients are generally enabled to leave their bed soon after the operation, often as early as the second or third day.

But there are two objections affecting the operation itself, which must be weighed against its encouraging results. Perineal lithotrity is a long operation—it must be conducted slowly to be safe; and the prolongation of anæsthesia, however great a convenience for the operator, is certainly an additional chance against the patient. There is yet a graver objection—namely, the great difficulty of the operation. It requires to be studied in all its details, and practised repeatedly for itself, before it can be safely attempted. Not only must the surgeon possess skill and experience, he requires the services of a competent assistant. However, it suffices to witness Professor Dolbeau at work, ably seconded by Dr. Félizet, to see that the art can be mastered, and made to look simple.

Professor Dolbeau is a thorough believer in his method. He thinks it will ultimately replace lithotomy. He has certainly shown it to be better suited than any other to a few difficult cases. Whether this sphere of usefulness is to be extended indefinitely, time must decide; but viewed only as a successful variety of existing operations for the cure of stone, perineal lithotrity deserves to become more widely known, and to be put to a more extensive trial.—*Lancet, Oct.* 17, 1874, *p.* 548.

56.—ON OPERATIVE MEANS FOR THE RELIEF OF PATIENTS SUFFERING WITH ADVANCED PROSTATIC DISEASE.

By Sir **Henry Thompson**, Surgeon Extraordinary to H.M. the King of the Belgians; Surgeon to University College Hospital, &c.

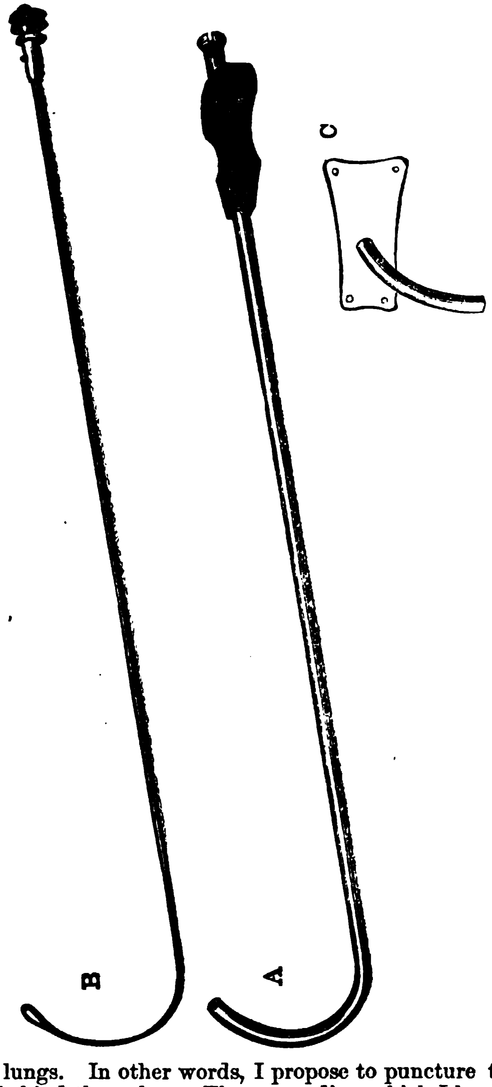
Very many individuals between fifty-five and sixty years of age begin to be unable to expel entirely the contents of the bladder. The act of micturition is more frequently performed, and requires some effort; the stream grows feeble, and, under the influence of external cold, or of some diuretic action distending the bladder, or other cause, it often happens that complete or nearly complete retention is established. In such a case the bladder is generally not emptied at any act in the most favourable circumstances; and if, immediately after an attempt to do so, a catheter be passed, a notable quantity, say from three or four to twenty ounces, will be left behind, and is drawn off by the instrument. Consequently the patient is taught to use the catheter, and does so periodically, say twice or three times, or more frequently, according to his necessity, in the twenty-four hours. As the patient increases in age the bladder often requires relief six, seven, or eight times per diem—a number by no means uncommon.

But in some cases, which happily are only exceptional, a more advanced stage arrives, b gradual steps, associated with a greatly diminished capacity of the bladder, so that the use of the catheter becomes necessary from sixteen to twenty-four times or more, in the twenty-four hours—a condition of extreme misery for the patient, inasmuch as it entails loss of rest, fatigue, and often also increased difficulty in passing the instrument from injury to the urethra by frequent catheterism. At this period, too, the augmented volume of the prostate sometimes makes the canal difficult to traverse alike for the patient and the surgeon; and if a false passage be made by either at this crisis, a fatal result almost of necessity follows.

A patient in these circumstances, then, exists for little else than to pass his catheter. No sooner has he obtained a half-hour's relief than he begins to feel the warning of another approaching call, and on each occasion he experiences some minutes at least of suffering in his endeavor to sustain as lengthened an interval as possible. His powers are tasked to the utmost, for continuous sleep is out of the question, and health rapidly declines. This hourly recurring task and the brief interval of rest which fall to the lot of such patients is a test of endurance of the severest kind. I have often been reminded that theirs is very much the same condition as that which exists as one of the chief athletic feats—first accomplished by the famous Captain Barclay, and often repeated since—that of walking 1000 several miles in 1000 consecutive hours, a task of no small magnitude; but with this wide difference—viz., that in the latter case the subject was in good health and training, knew the limits of his task, and expected a reward, whereas the patient is aged and infirm, and has small ground for hope as to the future of his trial. Indeed, "the odds" are largely against the latter in the struggle, and without a very decided change in his condition, he must lose miserably, and with inexpressible suffering, his "race against time."

The arrival of this stage, then, is the almost certain prelude of death to the patient. Hence I have naturally asked myself, having seen not a few of these cases, "Can nothing be done by any operative measures, for their permanent relief?" And I think it will be admitted that if these should be somewhat difficult or even be attended with some risk, the gravity of the situation warrants an attempt, if only a moderate chance of affording relief appears to be attainable. I say "permanent relief," because a temporary remedy exists for some in the employment of an in-lying catheter. To tie in an elastic or india-rubber catheter is an expedient which may avert the fatal result a little; but it can be only temporary, and it may even aggravate the malady and hasten the end. I assume also that medicinal agents, including especially opium, have ceased to suffice for the exigencies of the case. The bladder is, indeed, so organically thickened and diminished in capacity that hourly relief has become a *physical* necessity.

I propose, then, in these circumstances a proceeding similar to that which we employ in the trachea when death is imminent for want of air—viz., the introduction of a tube beyond the seat of obstruction—one which is to be permanently retained there as the constant channel for urine, just as the tracheotomy tube has been for many a patient the only channel during years for air to the lungs. In other words, I propose to puncture the bladder above, or rather behind the pubes. The proceeding which I have practised differs from ordinary puncture, and more resembles the high operation for stone, being rather a compound of the two. For, in the cases described, it must be remembered that the bladder is by no means distended with fluid, but may and must be nearly empty—a widely different condition, as regards operation, from the ordinary puncture. Moreover, the viscus is usually altered in position and largely deformed by masses of prostatic growth rising into its cavity,



A, Hollow sound, the end of which, when stopped with the stylet (B), forms the point which guides the operator in finding the bladder in the last incision. Size about 12 or 18.
B, Bulbous-ended flexible metal stylet.
C, Suprapubic tube of elastic gum about 2½ in. long, with silver plate, introduced in its whole length into the sound when the stylet is removed. The withdrawal of the sound leaves the tube in the bladder.

and sometimes even nearly filling the pelvis. I believe that puncture has never been done or recommended with this end in view—viz., to avert death by establishing a *permanent* outlet for urine when the urethra is no longer practicable through disease of the prostate and bladder. I do not overlook some interesting examples of retention of urine from stricture which were relieved by suprapubic puncture by my friend Mr. Thomas Paget of Leicester, and in which the tube subsequently became for years the permanent channel by which all urine passed. These operations, however, were not performed with that end in view, nor were they prostatic retention all; but it was the comfortable condition of these patients whom I saw, which led me to think of the analogous proceeding which I now desire to put on its trial.

The operation, which I have now performed three times, consists in passing a large sound hollow throughout, with a strongly marked curve; that represented at A in the adjoining figure I have found as good as any, but it may be modified somewhat, according to the case, and closed by a bulbous-ended stylet (B). The instrument is introduced by the urethra until the end can be felt just behind the symphysis pubis. It is then confided to an assistant to retain in its place. The operator now makes an incision not more than three-quarters of an inch in length, less if the patient is not stout, enough to admit the index finger tightly (since a large opening becomes embarrassing subsequently), in the median line at the upper margin of the symphysis. The tissues are separated by the finger, and the linea alba being next slightly divided by the point of a bistoury, the finger is passed down closely behind the symphysis, and when the end of the sound is clearly felt, a little opening is made so as to expose its point. The operator now, taking the handle of the sound in his left hand, makes the end protrude in the wound, the bulbous stylet is withdrawn, and he passes the tube C in its whole length into the hollow channel of the sound. He now withdraws this completely by the urethra, and in doing so necessarily ensures the passage of the elastic tube into the bladder.

When I first designed this proceeding I used a sound with a second stylet having a sharp trocar at the end to take the place of the first, intending to make the incision for the tube by merely pushing the trocar from within the bladder outwards to the skin, after which the tube would be inserted and lodged in its place by withdrawal as above. I learned, however, by several experiments on the dead body that although this was safe and easy of performance in a distended bladder, the peritoneum was usually wounded when the bladder was empty. Hence my abandonment of what seemed a very simple and easy proceeding. The path of safety therefore is to make a very small opening directly above the symphysis, then to find the way close behind it to the end of the sound there, and incise only just enough to allow this to be pushed up into view. The insertion of the tube into the hollow of the sound, and the withdrawal of the latter, as already stated, brings the tube into its place. But it may be remarked that the urine may not at first flow through it, for the withdrawal of the sound may carry the tube, not only into the bladder, but, when this is empty or very contracted, even through it into the prostatic urethra. If so, the tube has only to be withdrawn a little and the urine flows. Indeed, I have found that the tube is usually improved, especially in the subsequent progress of the case, by being a little shortened. It is then to be fastened securely with tapes and plaster, and to be worn a few days in bed until the parts are consolidated, and the patient can move about with safety. If the tube escapes during the first two or three days it may not be easy to replace it, but when the passage is established it may be removed and replaced easily enough. A very important injunction is to make the wound as small as possible so as to be nearly filled by the tube. A large wound is more painful, and is constantly traversed by the urine.

I will now briefly sketch the three cases in which I have done this, and give you the results.

The first patient was a man sixty-three years of age, admitted into this hospital, January, 1869. He had for several years passed all his water by catheter, and for a long period had done so every hour and a half day and night, sometimes oftener. Examination by rectum showed the existence of a large prostate, the coats of the bladder were thickened, the urine charged with inflammatory products. He remained three months, and, notwithstanding rest and treatment, but slightly improved. It was evident that his troubles were not due to temporary irritation, but to organic changes greatly diminishing the capacity of his bladder as a reservoir. I need hardly enlarge on the importance of carefully drawing this distinction. Having explained to him fully in presence of the class the nature of his case and the design of my operation, he gladly accepted my proposal that I should do my best to relieve him. The operation was easily performed on the 12th of May, in the manner described, with immediate relief to the patient. Unluckily, on the third or fourth night the tube escaped, and the house-surgeon was unable to introduce it. The urine issued freely by the wound. The next day, at my visit, it was but too obvious that the walls of the new passage had not been yet sufficiently consolidated to protect the surrounding parts, and that extravasation had taken place into the scrotum. I at once made free incisions and tied in a catheter It was a severe trial for the patient, but he came triumphantly out of it. The following six weeks, however, were occupied with this unfortunate accident and its results; meantime I had at an early period, and without difficulty, put the tube in its place and made it fast there by tapes and plaster. A week or two after the route was established and the tube was removed, washed, and replaced with the greatest ease every day. During the summer his health continued feeble; no catheter was necessary, the urine passing by the tube ; but from insufficient attention to changing and cleaning it, phosphatic deposit formed on it, and gave much trouble. I lost sight of him in July, and he gradually failed in strength, and died in September.

The second case was that of an old and well-known medical friend, on whom in 1867 and in 1869 I had successfully operated by lithotrity. For a long period he had passed all his urine by instrument; he was now upwards of seventy-five, and had, after many years of trouble, arrived at the latest stage of frequent and painful catheterism. I was called to him in January, 1870, suffering from such extreme sensibility that he dreaded passing the catheter, which was necessary twelve times in the day and night. He was clearly approaching his end, and I agreed to perform this operation solely with the view of making his last days more comfortable. Mr. Clover gave him chloroform, and I did it on Feb. 7th. All went well; he never required the catheter again; he kept his bed, was comparatively free from suffering, and died three weeks afterwards.

The third case was probably seen by some of you here last spring. E. P., aged fifty, was admitted to this hospital April 22nd, 1874, having suffered from severe symptoms four years, the last two and a half of which he has withdrawn all his urine by catheter. Of late his sufferings have been great: his catheter is passed every half hour in the day, and he sometimes retains one for a part of the night. The prostate was "hard, nodulated, and enlarged"—a condition of very bad augury, occurring as it did before the age at which hypertrophy of the prostate appears. On May 7th I performed the operation described with the view of diminishing his pains and affording him rest. It was followed by relief, especially after the first day or two, and he gained long periods of sleep, which he had not had for months before. Nine or ten days after the operation he showed signs of failing strength, and he sank on the 21st inst. The autopsy showed cancer of the prostate and adjacent part of the bladder, of the scirrhus kind—the only case I have ever seen. The iliac glands, those about the base of the lungs, and the lungs themselves, showed the presence of the same deposit to a considerable extent. The only other authentic case on record is that reported by Mr. John Adams. The word "scirrhus," it should be remembered, has been often erroneously used, particularly by ancient authors, to denote organs which are enlarged by hypertrophy.

I have thus put the bare facts before you relative to these three cases. Little need exists for remark. In two of them, the second and third, the operation was adopted solely as a last resource, to mitigate the sufferings of patients whose fate was already sealed. In the first, I operated at a somewhat earlier period, with the view of prolonging and rendering more comfortable a possible year or two of life. The unfortunate accident of extravasation was too great a demand upon the resources of the patient, and, although he recovered, yet his stock of vitality was largely exhausted. We must recollect that it was the first experience, and I gathered from it useful lessons. I made the opening much smaller afterwards, took redoubled care to retain the tube at first, and subsequently I should in such case remove and wash it daily. The operation itself, properly performed, makes little or no demand on the patient's powers. I have no doubt I shall give it further trials. Thus prepared by past experience, I have faith in its utility for appropriate cases.—*Lancet, Jan.* 2, 1875, *p.* 3.

57.—CALCULOUS DISEASE OF THE KIDNEYS.—CALCULOUS PYELITIS.

By Dr. W. R. Basham, Senior Physician to the Westminster Hospital.

Calculous disease of the kidneys is the major result of lithuria. The previous existence of a lithuric state, with more or less evidence of lithuria, is the invariable and necessary origin of calculous disease. In many this antecedent or precursory stage is overlooked—just as the premonitory symptoms of gout may be overlooked or unnoticed; for gout is the very essence of lithuria. It is the precipitation in certain tissues, chiefly fibrous and cartilaginous, of the lithic acid in combination with soda. So in calculous disease, the lithic acid precipitated, in the absence of its alkaline solvents, from the blood, either as an oxalurate, and then combined with lime as an oxalate, or as pure lithic acid in amorphous masses or in crystalline grains, is detained in the renal tubes, from whence it may be washed out with symptoms of nephralgia, or still retained, slowly increasing by the accretion of similar particles, and at length setting up a group of symptoms which in their aggregate constitute the indication of calculous disease. The most characteristic starting-point in these cases is slight and perhaps scarcely, except by microscopic aid, appreciable, hæmaturia. In some the hæmaturia is palpable and startling the patient with alarm; in others, the presence of blood may only be suspected by the observant eye, and this well-formed suspicion only verified by microscopic examination. The state of kidney which gives rise to these attacks of hæmaturia is certainly not of an inflammatory character. There is no constitutional disturbance. The attack is mostly unexpected, occurring in many cases, without any warning, oftentimes apparently induced by some bodily effort. Horse exercise, or similar jarring physical acts, a jump, the jolting of a carriage over rough ground, have severally been referred to as the apparent exciting cause. It has been already stated that nephralgia, lumbar pain, frequency of micturition, and the occasional presence of crystalline grains of lithic acid in the urine, may indicate a disposition to calculous disease; but it is not till one or more attacks of hæmaturia have occurred that the proof is reached of a stone or gravelly matter being lodged in the kidney. Further proof may now be found in the occurrence of specific sympathetic sensations in certain nerves intimately associated or connected with the renal plexus of nerves; aching pain in the crest of the ilium; pains across the loins of a character similar to lumbago, only that in the latter disorder the pain is excited chiefly by motion or muscular effort necessary for change of position, while the lumbar pain in renal calculus is unaffected by motion, and is dull and continuous when it is present. The external crural cutaneous nerve of the thigh often exhibits special alteration in relation to cutaneous sensibility: ordinary sensation is exchanged for singular errors of sense—not confined, however, to the limits of the distribution of the fibrils of this last-named nerve, but occurring in other parts of the skin surface of the lower extremities.

The explanation of the attacks of hæmaturia may be offered as follows :—

Post-mortem examinations have demonstrated that not unfrequently there may be lodged in the straight tubes of the cones deposits of lithates or even crystalline particles of lithic acid, or crystals of oxalate of lime. They are seen as marking a distinct and visible deposit in one or more of the tubes when a section is made through one of the mammillary cones. They give a streaked appearance to the cone, the tubes blocked by these matters looking pale or even resplendent against the light. The nature of this deposit has been determined by analysis, as well as by the microscope. In many instances, doubtless, this deposit is only temporarily a cause of irritation. It is driven forward by the urinary current and washed out by the urinary stream, and, as sand and gravel, appears as a sediment in the voided urine. In other cases, however, if carried out of the renal tubes, the material may be detained or lodged in some recess of the calyces, and then by slow accretion increases in size ; and, according to its composition or by the nature of the succeeding layers added to its surface, remains and forms as it were a home for itself, becomes perhaps encysted, and is lodged permanently within the sulcus of the kidney: or, if it escapes into the infundibulum it may pass down the ureter, accompanied by marked and most characteristic symptoms, into the bladder, from whence it may be voided through the urethra, and thus happily terminate in a spontaneous relief. This favourable result happens only when the calculus has not exceeded a certain size, and when its composition is either oxalate of lime or lithic acid, or the former constituting a minute nucleus, with concentric layers of lithic acid superimposed. Such a calculus, to bring it within the probability of spontaneous escape, rarely exceeds in size a small pea. In women such calculi may become as large as a lentil or small haricot bean and yet obtain their escape through the larger capacity of the female urethra. The writer has in his collection two that are of the size of a small white haricot bean, passed at intervals of many months, from a female patient.

In all similar cases there is one clinical fact that should not be overlooked, and which may account for the escape of some calculi and the hopeless retention of others. So long as the irritation set up by these calculi is little more than simply hyperæmic, relieved by the escape of blood occasionally, and the urine is charged with mucous exudation corpuscles only in a very moderate degree, and if the lithates in the urine are absent or very scanty, the calculus will increase by the addition of fresh layers of pure lithic acid, the growth will be slow, and the surface remain smooth,—a condition essential to a spontaneous escape. But let the urine be loaded with lithates, let the irritation excite a blennorrhagia of the mucous surfaces of the calcyes, and such an amount of mucus is excreted that at first lithates are rapidly deposited on the surface of the renal calculus ; its growth is thus accelerated ; and further, this abundance of organic material excites molecular change in the urine passing over the calculus, and now in addition to layers of lithates, external with the uttermost layer of lithic acid, we find these layers either alternating with the layer of the triple phosphate, or in some cases formed exclusively of this latter. These changes not only increase the volume of the calculus to a size which is unfavourable to its escape, but the addition of the lithates and mixed phosphates induces irregularity of surface, and in place of a smooth, or at most a slightly granular surface, the outermost layer adapts itself to the spot in which it rests, and often forms a kind of mould of the space in which it grows. It thus becomes permanently lodged, growing slowly, moulding itself to the interior of the pelvis of the kidney, and at first partially, but eventually completely, blocking up the entrance to the ureter, and thus gradually developing the symptoms and the condition known as calculous pyelitis. The subject of calculous pyelitis will be discussed hereafter, and it will become an important point to consider the differential diagnosis between this form of renal disease and tubercular or scrofulous pyelitis.

It has been stated that the amount of mucus in the urine in cases of renal calculus is a point of considerable practical importance; for so long as its amount is moderate, and the character of cells composing it mono-nuclear, with here and there a multi-nuclear cell (Gluge's corpuscle), there is little apprehension of any rapid increase of the calculus, and consequently up to this stage a possibility of the escape of the calculus from its prison-house in the kidney. It is always desirable in cases of renal calculus to hold out to the patient the possibility of such an occurrence, at the same time making known the character of the symptoms by which this escape may be recognised. This also serves the purpose of lessening the alarm which the patient may feel at the very urgent symptoms which usually accompany the descent of a calculus down the ureter. To the aggregate of these symptoms the very appropriate name of renal colic is applied. Usually without any special previous warning—saving, perhaps, some lumbar pain, or the aggravation of some of the previous symptoms, such as increased pain and uneasiness at the neck of the bladder—a sudden pungent griping pain occurs, with urgent but ineffectual efforts to void urine, for the bladder is usually empty. This paroxysm of pain is at first of short duration, but it is soon succeeded by fresh paroxysms, with a sense of deathlike faintness ; more and more urgent the anguish increases; the body literally writhes with pain; posture after posture is assumed in seeking mitigation of the cruel griping colic. The face and forehead become drenched in sweat. Nausea at first, becomes developed into vomiting; and it occasionally happens that after the first full act of vomiting, a temporary lull in the tempest of suffering follows. The patient eagerly seeks the recumbent position. During this tumult the respiration and circulation are only so far affected as they are related to violent efforts of straining, when the glottis is momentarily closed and the diaphragm and abdominal muscles fixed. So soon as the paroxysm of colic abates, the pulse and respiration become quite natural. The period of rest varies much: in some a day or two may elapse before a second, in others the attack is repeated after a very short period of remission. In these latter, after two or three of these paroxysms a complete interval of rest follows, and for a day or two nothing occurs to engage the patient's attention, except it may be that such measures of treatment may have been adopted as to leave some mark of their effects ; and this is particularly so, if large doses of opium have been taken to alleviate the colic and relax the spasm of the ureter. In some future observations on the treatment of this form of renal distress this point will be further discussed.

The next phase of this form of calculous disease is usually of short duration, but nevertheless causing a momentary alarm and suffering on the part of the patient. It must be remarked here that this paroxysm of colic marks the descent of a calculus down the ureter from the kidney. Now, it may happen that weeks and months, even longer, may follow without any indication of renal or urinary disturbance, till a group of symptoms rise up which tell beyond doubt that the bladder has become the home of the calculus. But very many cases of renal calculus, particularly those belonging to the type just described, never suffer from stone in the bladder. The sequel to the renal colic is as follows, and the writer is in possession of twelve renal calculi from as many patients, which were voided with symptoms almost identical in each: all had suffered from antecedent renal colic:—On passing water the patient suddenly feels an obstruction to the passage of urine through the urethra. Urgent straining follows. Great pain and alarm, with a sickening feeling of nausea, are not unusual. After a short interval the obstruction suddenly gives way, and the urine bursts forth with a rush, and if fortunately the event happen when the patient is using a chamber-vessel, a smart ringing sound of something solid falling enables the patient to recover the calculus which has so long been the cause of all his distress. In women, the passage of a calculus through the urethra is not accompanied, except the stone be unusually large, by anything like the suffering experienced by a male patient. Such a favourable termination of stone in the kidney is by no means rare, and the probability of the recurrence of the disorder depends greatly on the chemical composition of the calculus; it is therefore of the last importance for a correct prognosis that this characteristic of the calculus be correctly ascertained by analysis. The following conclusions may be safely relied on:—If the calculus be oxalate of lime, either chiefly or solely, it may be concluded that it is unaccompanied by others—in fact, that it is solitary ; and the probability of the recurrence of the disorder reduced to a minimum. Experience justifies this prognosis. If, on the other hand, the calculus be composed of lithic acid, pure or mixed with lithates, it is almost certain that either there are others ready to follow the first, or at any rate that the material for their formation is in existence, and that sooner or later the recurrence of the disease may be expected. Hence, an important clinical induction follows, that in the lithic acid diathesis, those dietetic and therapeutic measures which experience teaches are the best alleviations must be unremittingly continued, or at any rate should be frequently employed, especially on the slightest sign of disturbed renal secretion. In the oxalic diathesis this is less needed, for the recurrence of calculus in the kidney when pure oxalate of lime concretion has been passed is extremely rare.—*Practitioner*, *December* 1874, *p.* 392.

AFFECTIONS OF THE EYE AND EAR.

58.—A NEW CATARACT KNIFE.

By C. Bader, Esq., Ophthalmic Surgeon to Guy's Hospital.

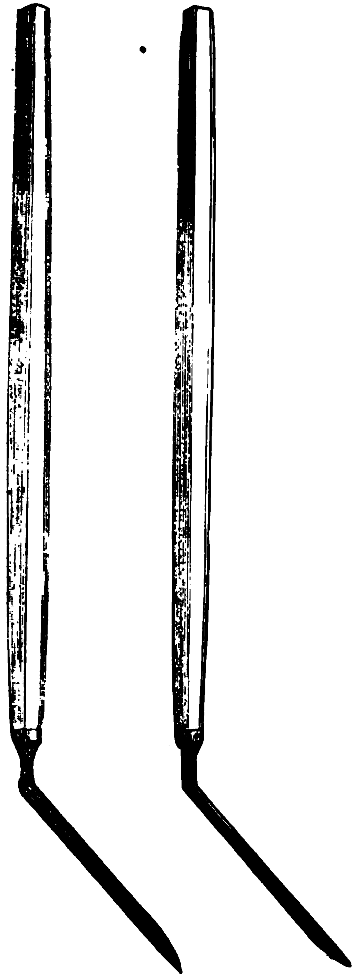
To obviate the inconvenience arising from the inward movement of the eyeball, when commencing the corneal incision in the operation for cataract, a new knife has of late been used. It so thoroughly answers its purpose that it can be recommended in preference to other cataract knives. If standing behind the patient, we wish to operate upon the left eye with the right hand, and upon the right eye with the left hand, two different knives—one for the right and one for the left eye—are required, unless the operator prefers using the right hand only, when the bent knife, used with the right hand for the left eye, may be used for the right eye also, commencing, however, the incision at the outer margin of the cornea. By the employment of the bent cataract knife, commencing the incision at the inner margin of the cornea, great control is obtained over the movements of the eyeball, whether the incision be made upwards or downwards. The natural inclination of the eyeball to roll inwards towards the nose when operating in the usual manner, instead of being a source of trouble, becomes a help by the use of the bent knife. The blade is somewhat wider than that of von Graefe's knife, the point is in a line with the back, and the blade is bent away from the handle in such an angle as to admit of easy access to the inner (nasal) margin of the cornea.—The knife has been made for me by Messrs. Weiss, of the Strand.—*Lancet*, *Nov.* 28, 1874, *p.* 760.

[Mr. R. Brudenell Carter, in a note to the Lancet of Dec. 5, with reference to this knife, says :—" I am sorry to be obliged to set aside the claim of my friend Mr. Bader to have invented a 'new' cataract knife. The right-hand knife of the pair which he describes was made for me by Messrs. Weiss about six years ago, and is still in my possession. On fair trial it seemed greatly to resemble the patent corkscrew, which had for its chief merit that it did not give much more trouble than the common one ; and I soon relinquished its employment without giving an order for its left-hand companion. But it is my new knife if it is anybody's."]

59.—ON THE APPLICATION OF ATROPINE IN AFFECTIONS OF THE EYE.

By R. Brudenell Carter, Esq., Ophthalmic Surgeon to St. George's Hospital.

The use of atropine is best accomplished by a solution in distilled water of the neutral sulphate, of the strength of two grains to the ounce. This solution, if the drug be pure and neutral, is absolutely unirritating to most eyes; and a drop may be placed in the lower conjunctival fold, near the outer canthus, two or three times a day. For the purpose of making the application, there is nothing better than a goose-quill, cut to a blunt scoop; but, considering the highly-poisonous nature of the solution, it is perhaps safest to send it out in special bottles, with a dropping apparatus attached. Various contrivances have been devised for this purpose; but the best of them is a little blown-glass bottle. By heating the bulb of this bottle slightly in the flame of a spirit-lamp, the contained air is caused to expand; and then, by inverting the bottle, and dipping its beak into the solution, a sufficient quantity will be driven through the capillary opening by atmospheric pressure. In use it is only necessary to invert the bottle, to hold it in the warm hand, and to touch the lining of the lower eyelid with its beak, from which a drop will issue.



See page 156.

If the application of atropine should be painful, the most probable explanation is that the drug is impure or not neutral, or that sulphuric acid has been either set free by spontaneous changes, or added by the dispenser to obtain a clear solution. In such case, no time should be lost in obtaining a fresh supply. But when atropine has been long in use, the best preparation is apt to cause local irritation in some persons, and this irritation is usually more manifest in the eyelids, and especially on the lower lid, and on the adjacent skin of the cheek, than elsewhere. It may be readily recognised by a peculiar stiffness and dryness of the inflamed skin; and the swelling of the eyelid is usually sufficient to remove the lower lachrymal punctum from contact with the globe, and thus to produce an overflow of tears. Under such circumstances, the atropine must be laid aside, and some soothing application made to the closed lids. The best is, I think, the compound ointment of subacetate of lead of the British Pharmacopœia, which may be applied to the skin freely, and a soft bread-and-water poultice laid over it. But it is a rule without exception that no preparation of lead should enter an eye when there is any loss of corneal epithelium; because we are then liable to have an opaque deposit of carbonate of lead formed upon the surface. If the corneal surface should be ulcerated or abraded, it is the safest practice not to let lead come into use, even as an external application, for fear of mischance; and in such cases I prescribe for the atropine irritation a simple ointment, into which a little sedative solution of opium has been stirred—perhaps in the proportion of half a fluid drachm to an ounce of ointment. There are some persons, however, by whom no preparation of atropine or of belladonna can be borne even for a time; all of them alike producing an erysipelatous inflammation. Such instances are rare; but there are few writers on ophthalmic surgery who do not record one or more from personal experience, and I have myself met with two of them. It is unnecessary to say that such an idiosyncrasy places a most formidable obstacle in the way of treating iritis and various other affections.

In the case of children, and especially the children of the poor, who are often roughly handled by their parents, and who have not learnt to trust to them, the proper application of atropine is sometimes a matter of considerable difficulty; and the solution is very apt to be washed out, or at least diluted, by tears. At hospitals we constantly see children for whom atropine has been prescribed, but whose pupils are not dilated. Occasionally, perhaps, no one at home has taken any trouble about the matter; but more frequently, I believe, the drops have gone over the cheeks, or anywhere but into the eyes, or they have been applied so roughly as to produce plentiful crying. In hospital practice such children can be brought every day, so that the application may be made effectually; and it will often be desirable to use, instead of the solution, the little wafers of atropinised gelatine which were devised by Mr. Streatfeild. I do not like these wafers for common use, because they often produce too much smarting; but for crying children they have a great advantage in the fact that they dissolve slowly, and that the medicament is not liable to be at once washed away by a gush of tears.—*St. George's Hospital Reports, vol.* vii., 1872–74, *p.* 121.

60.—ON DEPLETION IN DISEASES OF THE EYE.

By R. Brudenell Carter, Esq., Ophthalmic Surgeon to St. George's Hospital.

The practice of depletion, which was once largely followed by ophthalmic surgeons, is now confined within narrow limits. It seems scarcely credible, but is none the less a fact, that it was once customary to bleed copiously from the arm in iritis and in purulent ophthalmia, and even to follow the bleeding by the application of countless leeches. It is a curious matter of history that the various devices for making a leech take more than once had their origin in the enormous demand for these creatures which was occasioned by the epidemic of contagious ophthalmia that prevailed in Berlin in the year 1820. At the present day, we take blood in eye-disease only sparingly, and chiefly by two methods—the natural leech and the artificial one. The natural leech is very useful in many superficial diseases; the artificial leech chiefly in those of the deeper parts of the eyeball. In any form of ophthalmia which is attended with great heat and swelling of the eyelids, in some cases of iritis, and in some cases of injury, including many operations for cataract, a leech may often be usefully applied. The best position is usually over the frontal bone, immediately external to the margin of the orbit, and a little above the level of the external canthus. I say a leech rather than leeches, because I think it undesirable to multiply bites. If more blood be required than one leech would be likely to draw, the best plan is to make a free longitudinal incision, with a sharp lancet, into the creature when it is nearly full, and it will then continue sucking until detached, being no longer inconvenienced by the distension of its alimentary canal and integument. The incision should be made in the side of the leech, near its caudal extremity. The artificial leech is much more rapid in its action than the natural one; and is essentially a cupping instrument, adapted to take a few ounces of blood quickly from the temporal region. The form in common use is that of Heurteloup, improved by some recent modifications. The cutting portion consists of a sharp punch, capable of being set to any desired depth, and made to revolve rapidly by releasing a coiled spring. The blood is received in a glass cylinder, which is pressed upon the skin around the wound, and which has a well-fitting piston, working by a screw rod. As the operator screws up the piston, the blood follows to fill the vacuum which is produced. The knack of application consists chiefly in not turning the screw too quickly ; for otherwise, if the piston be drawn up faster than the blood can follow, the pain of the operation will be considerable. Whenever this method of depletion is used for deep-seated maladies, such as those of the retina or choroid, it is desirable to keep the patient in almost total darkness for the next twenty-four hours, so as to avoid a vascular reaction, by which the original congestion might be increased.—*St. George's Hospital Reports, vol.* vii., 1872–74, *p.* 123.

61.—OBSERVATIONS ON IRIDECTOMY WITH AN ACCOUNT OF 118 CASES.

By Bowater J. Vernon, Esq., Ophthalmic Surgeon to St. Bartholomew's Hospital, London.

The operation of iridectomy, or the removal of some portion of the iris, is more frequently performed than any other in the whole range of ophthalmic surgery. Since the days of Cheselden, the formation of an artificial pupil by some modification of iridectomy has restored sight to thousands, and in our own time it has been successfully—and, it must be added, indiscriminately—resorted to as a remedy for certain progressive diseases of the eye as well. The discovery by Von Gräfe of its efficacy in glaucoma, and in other and allied diseases in which the intraocular tension was increased, took the surgical world by storm ; and the immediate consequence was that it was performed, in many instances without any rational prospect of benefit, in all kinds of affections of the cornea and of the iris—in any case, in short, where there was stubborn inflammation to subdue, and even in not a few cases of long-standing amaurosis with the unwarrantable hope that some ultimate good might ensue.

This paper does not in any way pretend to give a complete history or description of the various modifications of the operation, but it seeks to define and put upon record the leading principles on which the operation has been performed by Mr. Power and by myself.

The cases are 118 in number, and may be conveniently divided into three classes, each of which has an accompanying table, and which deserves a separate notice.

Class I. Iridectomy for artificial pupil.
" II. Iridectomy for glaucoma.
" III. Iridectomy for iritis and allied conditions, and for the sequelæ of iritis.

The steps of the operation require no special mention, as they have not in any essential point differed from the methods which are fully described in any modern text-book, nor have I thought it necessary to mention the name of the operator in each individual instance.

Class 1.—The operation for the formation of an artificial pupil is in principle the same as that performed with such success by Cheselden in 1785. Since that day many varieties have sprung out of the old method, and much attention has been given to details which are more or less important under varying circumstances. Naturally the assistance afforded by anæsthesia has been very great, and has rendered the operation easier and safer, and has rendered its performance justifiable under difficult and disadvantageous circumstances. In a certain number the result is as satisfactory as could be wished, and although in by far the larger number there is something gained, my own experience, so far as it has yet extended, leads me to think that the amount gained is not really as great as is expected ; the reasons for this are not far to seek, but are not, it seems to me, clearly understood.

The amount of damage inflicted upon an eye by a properly executed operation is exceedingly small, and it is surprising how little it is resented; except where blood has been left in the anterior chamber, the irritation and the ill-effects of the operation are at an end almost as soon as the corneal wound is healed. It is a well-established fact that a healthy iris will bear cutting with impunity, when a very small amount of pressure, as by pinching in a wound of the cornea, or by stretching during the escape of the lens through the pupil, or even the friction by flakes of soft lenticular matter during the solution of a cataract, will infallibly cause iritis. By far the majority of cases which require an artificial pupil are cases of opacity of the cornea, and it is to be noted first of all that impairment of sight is by no means in proportion to the apparent density or the extent of the opacity. Very much will sometimes depend upon the disposition of the opacity, and it will often happen that a nebula, so thin that it will hardly be detected except by oblique illumination, will interfere with vision much more than a very dense, although a more limited, leucoma. The effect of an opacity of the cornea is to scatter the rays of light in such a manner that the images of objects are blurred and indistinct; they are often surrounded by fringes of colour, and in many instances are multiplied. Any one of these defects is sufficient to prevent binocular vision, and rather than submit to them the patient will suppress the vision of the imperfect eye altogether; so that in a case of corneal opacity of long standing, there is very rarely any binocular vision, at least not for near or for small objects. The main feature of an operation under such circumstances is a displacement of the pupil; and when this has been accomplished, the rays of light gain access to the fundus through those portions of the lens, and in such a direction that the aberration, both spherical and chromatic, due to irregular refraction, must be excessive. The irregular shape and the large size of the new pupil must mar the distinctness of vision as well, so that, even under the most favourable circumstances, the images upon the two retinæ can never be mentally combined, and it becomes difficult in consequence to understand how binocular vision can be restored by an operation of this kind. We never meet with diplopia as the result of displacement of the pupil, which should assuredly be the case if the images upon the two retinæ were of equal power, and when they are formed upon portions of the fundus which do not correspond with each other.

The determination of the existence of diplopia is never very easy amongst unintelligent patients, and with children it is out of the question. The complaint of "seeing things double" is often made, but when analysed it generally resolves itself into seeing things with indistinct outlines.

What the patient really will gain, and what is of the highest value to his comfort, and in every sense to his safety, is an extension of his field of vision for large and surrounding objects, and this alone is sufficient to render an operation expedient in almost every case of corneal opacity. It may even happen that the lateral vision may be seriously curtailed by an opacity, which may yet permit good vision for near objects in certain directions, but not in such a position as to allow of binocular vision: it is better for such a man to give up his near vision, which he will never exercise while his other eye remains sound, and to gain in exchange an amount of lateral vision, which will add greatly to his comfort. In the case of children small central opacities of the cornea are very apt to lead to the development of a squint, and this tendency may be obviated by an operation if it be performed sufficiently early; and in those sad cases of extensive opacity which sometimes follow the purulent ophthalmia of infants, it is advisable to avail one's self of the smallest portion of transparent cornea, with the hope that even a small amount of light admitted into the eye may assist in the growth of the recti muscles, and so prevent the restless oscillation which such eyes very often present.

In the performance of an iridectomy for artificial pupil there is a golden rule for the surgeon to bear in mind—The new pupil is to be as small as he make it: if it be too large, there is disfigurement, and the vision is rendered indistinct by circles of dispersion and by other obvious optical defects; and if it should be large enough to extend to the ciliary attachment of the iris, the power of accommodation may be diminished. It is not so easy as it would appear to be, to enlarge the natural pupil by merely excising one of its borders; for when the iris has been gripped with the forceps it is very difficult to remove only just enough, and to do this it is necessary that the wound of the cornea should be almost over the situation of the new pupil. And if the healing of the wound should be followed by any haziness, as will be the case sometimes, then most of the benefit from the operation will be thrown away. In order to avoid this difficulty, the wound is made at the scleral junction, the iris is too freely excised, and the operation is done as if it were required for antiphlogistic purposes, and not for optical considerations.

Class 2.—The indications which call for iridectomy as a remedy against progressive disease, and for antiphlogistic reasons, are now well understood, and they may be shortly described as follows:—

Increased intra-ocular tension under any circumstances, whatever may be the character of the disease, provided it is associated with any loss of vision, or with any of the subjective phenomena, such as flashes of light or coloured vision, or the appearance of pulsation in the vessels, especially in the arteries, all of which point to a want of balance between the intra-ocular and the intra-vascular tension within the eye. Under this head are classed all the forms of glaucoma, and those cases which under certain conditions of age and temperament are very prone to assume what may be called a glaucomatous aspect.

If there is one thing more certainly proved than another in the records of operative surgery, it is the power which an iridectomy, when properly performed, exercises over the progress of an attack of glaucoma. It must be stated, however, that judging from the number of cases of glaucoma absolutum which wander from one hospital to another in the vain hope of receiving benefit, either this fact is not sufficiently well known or the disease is very often not recognised. It cannot be too strongly asserted, that if performed early enough, the operation will restore sight; but if it be too late to hope for this, it should yet be done, for it will as certainly relieve the pain and other symptoms. This is not the place for any discussion on the theories which have been broached to explain its action, but it may be said here, that to be successful, the operation must be complete, and generally speaking, extensive. It will not be sufficient to enlarge the pupil, or to remove merely a small portion of the iris; it is absolutely essential to remove a section of the entire membrane, and to take especial care that the ciliary attachment is completely severed. It can never be too early to operate in such cases, but it may be too late; for when blindness is complete, and when secondary cataract has developed, and the whole eye is disorganised, should pain recur, it would be dangerous to trust to iridectomy. It is very likely to be followed by intra-ocular hemorrhage, and by increase of pain; the wound will not close, and the eye has to be removed. An eye which is absolutely blind from glaucoma, if it becomes painful, should be removed; such eyes may cause sympathetic ophthalmia, or may become the seat of malignant growths.

Class 3.—*The Sequelæ of Iritis.*—When the pupil is fixed by adhesions to the anterior capsule of the lens, its mobility is impaired in proportion to the extent of the adhesion; and when the eye is exposed to bright light, there is a constant struggle on the part of the iris to free itself and to regain its mobility. The consequence of this is a state of irritation and of congestion, which is ready at any moment to light up into a fresh attack of iritis. Experience will not yet warrant us in predicting of any case of synechia whether it will or will not go through this stage of irritation and of ciliary congestion; much will depend upon the nature of the patient's occupation, and upon the amount of care which he can bestow upon his eyes, and still more probably upon the nature and the extent of the adhesions. In my own experience recurrent iritis is exceedingly common. This very evening I have seen a gentleman who has had, he tells me, at least twenty recurrences since the original attack ten years since, and the descriptions of the disease in our text-books do not lay sufficient stress upon this fact. I must not be understood to imply that every case of synechia will cause recurrent iritis, or that iridectomy is always to be performed as a safeguard, but I do say that there is always a risk of recurrence, and this once established, there is a tendency to recur again and again, the eye being left a little more impaired by each attack; against this an iridectomy is a most valuable safeguard. It has been said that when the whole breadth of the iris has been cut through, the mobility of the pupil is destroyed ; no doubt it is impaired, and the curative action of the operation is due to the fact that the iris is no longer able to struggle against the adhesions which confine it. Iridectomy is no doubt a clumsy way of effecting this, when all that is required is a division of the iris, so that its mechanical powers of contraction are annulled; but it is found impossible to divide the iris in such a manner as to leave the lips of the section apart from each other without removing a portion of its tissue.

Some good surgeons still hold the opinion that the prolonged action of atropine, extending over months, will in the end be éfficacious in inducing atrophy and rupture of the adhesions by keeping them ever on the stretch. Undoubtedly it may do so when the adhesions are few and far between, and such are unlikely to cause recurrent iritis; but when the adhesions are extensive and membranous, the keeping them on the stretch is itself a thing to be avoided. The old argument against the use of atropine, that the adhesions are torn through by it and the capsule rendered opaque by their pigmented remains, being now decently buried, it is no uncommon thing to find a man of intelligence growing blind without knowing it, and it is still more common to find a lens dotted with pigment from old iritis without the patient knowing much about it.

With regard to the time at which the operation should be performed, it is advisable to allow the inflammation to subside; for if it be attempted while the inflammation is in progress, the tissue of the iris will be rotten and cannot be readily removed, the operation will be incomplete and imperfect, and the cell proliferation from the swollen edges of the iris will be so excessive that no good will result.

In all cases of total synechia—that is, when the entire pupil is blocked up by adhesions, and when the communication between the two chambers of the aqueous is obstructed—the operation is called for; but if it is to be of service it must be done in the early stages of the affection. The effect of a total synechia is most destructive; the communication between the chambers being destroyed, the aqueous humour which is secreted from the posterior surface of the iris collects behind it, and as the tissue of the iris bulges forward, the anterior chamber becomes shallow ; for a time there is an increased intraocular tension, but the iris undergoes atrophy, and the aqueous is no longer secreted, and the eye becomes gradually soft. Under such conditions an operation is difficult and of no service; for if it can be satisfactorily completed in such a shallow anterior chamber, and upon such unhealthy tissues, the lens is nearly always found to be opaque. If the eye is still painful, there remains nothing but its removal; but if it is not so, then there is yet a chance that with the extraction of the lens at some future time, some small amount of vision may be restored.

It may happen that in operating upon such eyes as these, the capsule of the lens may be opened when the adherent iris is grasped, while the eye is actually inflamed, with the forceps, the opaque lens bulges into the wound, and the operator finds himself compelled to complete extraction under conditions which are most disastrous; the wound is full of blood, for in these cases the bleeding is considerable ; the cataract is immature, and does not readily escape, and the vitreous drains away as water. The moral to be drawn from such a trouble as this is to operate early or not at all.

In many cases of anterior synechia there is a great liability to ciliary neuralgia, and to intolerance of light, which will yield at once when the strain upon the iris is removed by division of the synechia. Experience has shown that it is at all times unwise to leave the iris entangled in a wound of the nea ; this is so certain, that in wounds of the cornea, with a prolapse of iris, however small, it is best to disentangle the iris at any cost when the case is first seen; unless this is done at once, it becomes impossible afterwards, and the mere division of the synechia causes a large and irregular gap in the iris, which is very detrimental to vision.

Iridectomy is performed by some in many affections of the cornea. Under ordinary circumstances I have no belief in its efficacy in such cases, and as those upon whom it has been performed wander from one out-patient room to another, it is doubtful if they derive much benefit from it. In some rare varieties of progressive ulceration it is, however, a remedy which may fairly be tried, more especially if there be any increase in the intra-ocular tension. —*St. Bartholomew's Hospital Reports*, *vol.* x., 1874, *p.* 169.

62.—ON CONICAL CORNEA AND ITS TREATMENT BY OPERATION.

By Dr. JOHN A. NUNNELEY, Senior Ophthalmic and Aural Surgeon to the Leeds General Infirmary.

Perhaps the best idea of the difficulty of relieving conical cornea will be furnished by an enumeration of the principal among the many operations, &c., which have been suggested and carried out for its relief.

Repeated tapping of the aqueous chamber, with or without compression, has been resorted to to a very considerable extent, with, in the hands of English surgeons, usually negative results; French ophthalmologists, especially Desmarres and Desmours, however, speak of this plan, combined with careful and graduated compression of the eye, more favourably; in those cases, however, which have been benefited by this proceeding, the treatment has been much more prolonged than most patients here would submit to, I think.

Removal of the lens was many years ago suggested and practised by Sir William Adams, with the obvious purpose of counterbalancing the increased refractive power of the conical cornea; this was unsatisfactory, and appears to have been soon abandoned. Mr. Tyrrell appears to have been the first to recommend the alteration in shape and position of the pupil, so as to remove it from beneath the centre of the cornea, or that part which has its figure the most changed, to nearer the margin, where the rays of light are less refracted; the making an artificial pupil, in fact, by iridectomy; and this is the plan which has been the most frequently adopted, and been, on the whole, the most successful. It was pointed out by Von Graefe that, under these circumstances, the iridectomy answers a double purpose: 1st, by removing the pupil to a part of the cornea where the refraction is less, and, 2nd, by lessening the ocular tension, and so tending to arrest the progress of disease. In a paper in the Royal London Ophthalmic Hospital Reports, for October, 1859, Mr. Bowman recommended Mr. Critchett's operation of iriddesis for conical cornea, and showed that, by a double operation, one on each side of the cornea, reducing the pupil to a slit-like form, either horizontally or vertically, according to circumstances (usually the latter, as being more sightly), greater improvement to sight might be obtained than by any method previously tried. Von Graefe suggested another plan which has been in many cases advantageous, and which I have adopted on many occasions; viz., to produce ulceration of the apex of the cone, and, by the subsequent cicatrisation and contraction of this, obtain a flattening of the cornea; an indelible opacity remains, of course, in the centre of the cornea, and the position of the pupil has to be altered either by iridectomy or by iriddesis.

The operation which I performed in the present case is one which has lately been several times done. It consisted in the removal of an elliptical portion from the most prominent part of the cornea, and carefully bringing the edges of the wound together by sutures. By this means, a simple linear cicatrix is obtained, the opacity of which, if the wound heal well, disappears to a wonderful extent.

Alice Scott, aged 16, a domestic servant, was admitted into the General Infirmary on May 17th, 1873. Her general health, aspect, and habits were good. Four years ago she had scarlet fever, and from that time dates the commencement of her disease. She had lately not been able to see much with the left eye, the cornea of which was extremely conical, the apex of the cone being abraded and slightly opaque. The cornea of the right eye was also markedly conical, but to a somewhat less extent.

On May 18th, the following operation was performed on the left eye under chloroform. Two very fine curved needles threaded with very fine silk were inserted through the most prominent part of the cone, but not drawn through. In front of these needles, a small elliptical piece of cornea was removed by a long fine Von Graefe's knife and forceps. The needles were then drawn through, and the edges of the wound of the cornea thus made were brought together as accurately as possible. The lids were securely closed, and gentle pressure kept up outside ; the patient was kept in bed.

May 19th. She had little or no pain.

May 21st. The anterior chamber had nearly refilled; there was very little inflammation.

May 22nd. Under chloroform, the stitches were removed. The corneal wound was perfectly healed, and the anterior chamber entirely refilled.

May 25th. She was allowed to get up.

May 31st. With the left eye, she could read No. 16 Jäger, while previously she could only distinguish quite large objects. She was made an out-patient. She was readmitted on June 29th, 1873.

July 4th. The same operation was performed on the right eye.

July 26th. She could read No. 10 (Jäger) without glasses, and the sight was not improved by either concave or convex (spherical) glasses

August 23rd. She could read without glasses, with the right eye, No. 10 ; with the left eye, No. 6. With concave cylindrical lenses, and with the right eye—2½, the axis of cylindrical curvature being perpendicular, she read easily No. 4 (Jäger); with the left eye, with—5½, the axis being placed horizontally., she read No. 3.

I am aware that the use of stitches, as in the above case, has by some surgeons been thought unnecessary ; after, however, operating several times with and without them, I am satisfied that the risks are lessened, and that the best results have been obtained in these cases, where the plan above described has been followed, because the needles prevent much of the risk to the parts beneath the cornea during the operation, or any injury being done by the removal of the support of the cornea; but especially, the edges of the wound being brought together, it much sooner heals, and a single line of cicatrix is left, the opacity of which disappears in many cases almost entirely. —*British Medical Journal*, *Nov.* 7, 1874, *p.* 583.

63.—ON THE TREATMENT OF GRANULAR DISEASE OF THE CONJUNCTIVA.

By Edward Nettleship, Esq., Surgeon to the South London Ophthalmic Hospital.

It does not seem likely that anything will be found equal to nitrate of silver and sulphate of copper as local applications. When properly used they give results which, taking the nature of the disease into consideration, leave little to be desired. For general purposes there is nothing equal to a solution of nitrate of silver of 10 grains to the ounce of water, in which strength it is chiefly or wholly astringent. Ridgway, in 1812, came to the conclusion that this strength was the best, and precisely the same solution was strongly recommended by O'Halloran in 1824, who chose it after a prolonged trial of solutions varying from 1 to 30 grains in the ounce. Welch in 1869 still advis-
it. It is in common use at Moorefield's. This solution applied daily with

a moderately large camel's hair brush (the common penny brushes) cuts short most inflammatory attacks with great certainty and very much reduces the roughness and redness of the lids in the chronic granular condition, unless this be of very old standing. In a great many cases nothing else is required. After using it for several weeks on a number of children it will be found however that some of them do not improve either as to discharge or the state of the lids. With these either a solution of 20 grains to the ounce may be used, or the mitigated solid nitrate. If the want of effect has reference chiefly to discharge I prefer the 20-grain solution. When, however, the case is one of old thick granular lids the mitigated caustic often has more and better effect, especially as its action can be regulated with considerable nicety. The solutions of the above strength should not be washed off from the conjunctiva unless in a very few irritable cases, and such will generally not be fit cases for treatment by silver at all. The solid diluted nitrate of silver should at first be washed off after 5—10 seconds with a solution of salt (5 grains to the ounce) or of chloride of zinc (2 grains to the ounce), either with a syringe or a large soft brush; but it will be found after a few weeks that in many cases the application thus made has little effect, and it will be necessary either to wait from 15 to 30 seconds or more after applying the caustic before washing it away, or to omit washing it off altogether. The last procedure is perfectly safe in a great many cases from the beginning; but as, if used in this way to all the cases, there is risk of producing increased irritation and corneal ulceration in a certain proportion, the more cautious plan is safer. The difference between the effect of washing off the caustic and not doing so may often be advantageously studied by using one method to the right eye and the other to the left of the same patient, supposing that the disease was at first symmetrical in degree. The difference in the amount of improvement is sometimes very markedly in favour of not washing off the caustic, while in others (the more irritable ones) these conditions are reversed. The mitigated caustic should at first never be used oftener than three times a week, though some old cases will be found in which its daily application is necessary. The 10-grain solution must be used daily or three times a week, according to the effect it is found to produce. In applying these solutions I think it is much the best to invert both upper and lower lids and allow a large drop to flow over them, accompanying this with one or two gentle movements of the brush so as to distribute it equally; it is of importance to carry the brush high up above the upper edge of the tarsus in the upper lid, or this part, which is generally the seat of considerable structural change, will often escape contact with the solution. The same must be done in most cases with the solid caustic, though in this case more care is requisite in order not to touch the cornea; this accident (which has happened to me two or perhaps three times) can be avoided partly by keeping the point of the caustic forwards instead of backwards, and thus slightly lifting the upper lid away from the globe, and partly by pressing the inverted lower lid backwards and upwards, so as to intervene for a short distance between the globe and the upper lid.

Solutions of more than twenty grains to the ounce are unsafe unless washed off, and when this is done they have no advantages over the solid form, and are indeed less easy to localise than the latter. As a rule I prefer a solution to the solid caustic for young children, who often struggle a great deal, and for those elder children who are unruly; there is some risk of touching the cornea with the solid pencil if the head be suddenly jerked, and this can not always be avcided even when the child is held between the knees.

A certain number of patients do not improve under the use of silver in any form, nor even when used at long intervals; a few others are made decidedly worse by it, the congestion being permanently increased, the granulations growing rapidly and bleeding on the slightest touch. Most of these are cases which derive much benefit from solid diluted sulphate of copper (lapis divinus) applied two or three times a week or oftener, according to experience. Such as do not improve under either silver or copper will not, so far as I have seen, do so with preparations of either lead or tannin or tannate of lead. I have not, however, made any extensive or very prolonged trial with these substances, with the exception of the solid acetate of lead of which I shall say more below. Sulphate of copper is not, I think, any safer for average cases than the 10-grain solution of silver, while it is on the whole less efficacious and not so easy to apply, especially to young children. There are some cases in which it does decided harm of the same kind as sometimes fol lows the silver preparations, and my impression is that these occur oftener under the use of copper than that of silver. For these reasons I prefer the solutions of silver as standard applications, reserving the lapis divinus for those who get worse or do not improve under any form of silver. It is a curious fact, which I have several times observed, that children who are made worse by either of these substances are generally benefited in a marked degree by the other. I have been less struck with the necessity of changing the treatment than some other observers, the only decided impression I have on this point being that after no more improvement can be gained by silver, however varied in frequency or degree, the lapis divinus does sometimes carry the case considerably further.

There is no objection to the 10-grain solution of silver being applied by a careful and skilful nurse who has been taught how to use it. This may be quite safely done with a large number of the cases, provided that the medical officer sees them himself at intervals of a few days so as to watch their progress. This is another practical reason in favour of this solution over the lapis divinus, with which in effect it is perhaps most comparable and the use of which could not be left indiscriminately to a nurse.

I have made many careful trials of the solid powdered acetate of lead, both according to the method of Buys, and the modified plan of Gouzée which consists of applying the salt in a slightly moistened state instead of in dry powder. I applied acetate of lead in more than fifty cases, repeating it two or three times in several of these. The general result was that, when used on Buys' plan, the ordinary (acid) acetate (sugar of lead) had in most cases no effect at all on the granulations beyond whitening them for many months. It slightly increased the discharge when this had been present before, while in a few cases it did decided harm by leading after some months to ulceration of the cornea, due, no doubt, to the apices of the granulations being rendered harder and rougher by its presence than they would have been if left alone. When applied on Gouzée's method I found that it did harm in a much larger proportion of cases, especially by causing ulceration of the conjunctiva followed by the formation of cicatricial bands which often imprisoned small lumps of the salt beneath them; these rough, projecting nodules and scars often after several weeks or months set up or predispose to relapses of conjunctivitis, and in several cases ulceration of the cornea was produced by them. In one child slight organic entropion occurred, which was, however, easily remedied by removing a horizontal fold of skin. I think, therefore, that the use of powdered salts of lead in the treatment of granular lids should be definitely abandoned as having no good effect and often a very bad one.

After the application of preparations of silver and copper cold fomentations should be used if there is much pain; they greatly relieve the present pain and the risk (which is generally greatest, I think, when the pain is most severe) of too great inflammatory action setting in.—*British and Foreign Medico-Chirurgical Review*, *Jan.* 1875, *p.* 191.

64.—ON THE USE OF A STYLE IN OBSTRUCTIONS OF THE LACHRYMAL APPARATUS.

By Dr. JOHN A. NUNNELEY, Senior Ophthalmic and Aural Surgeon to the Leeds General Infirmary.

It is not my purpose now to speak of affections of the lachrymal apparatus in general, but only of one method of treatment of those diseases of the sac or nasal duct in which dilatation of the latter by mechanical means is necessary.

The difficulty formerly experienced in dealing with such cases is sufficiently shown by the great variety of probes of metal and catgut, of many shapes, and to be used in various ways, and of styles and tubes, and other mechanical appliances, which were devised, often with great ingenuity, with the object of dilating and keeping open the nasal duct. Except the simple style, introduced through the skin and the anterior wall of the lachrymal sac, these contrivances failed more or less in their object, and were abandoned. In many respects the treatment by the style was satisfactory enough. It had, however, some objections: its appearance was unsightly, it was liable to fall out or be dragged out in various ways, and after its removal in some instances the opening which was left refused to heal, and a lachrymal fistula was the result. Since the general introduction of the very simple and admirable operation of division of the canaliculus into the lachrymal sac, devised by Mr. Bowman, the description of which was published in the transactions of the Royal Medico-Chirurgical Society for 1851, the treatment of cases of epiphora depending upon displacement of the puncta or obstructions of the canaliculi or nasal duct, has been reduced to narrow limits, this plan presenting such conspicuous advantages as to have been almost at once generally adopted. By it the sac and nasal duct can be reached and treated through natural passages, without external wound. The advantages gained by this mode of procedure are many, and its disadvantages few. The latter are, mainly, that in order to keep open the wound along the canaliculus, which has been divided, it is necessary to pass a probe along it several times, or the incision will close (as it frequently does unless considerable care be taken); again, the probe must be passed through the nasal duct at intervals, longer or shorter according to the nature of the stricture. All this involves, of course, considerable pain, and is more or less tedious, usually requiring several attendances on the part of the patient, so that there is oftentimes difficulty, both in public and private practice, in persuading persons to persevere for a sufficient length of time.

These objections may be avoided, and the whole treatment greatly simplified, in most instances, by the use of a form of style introduced some years ago, I believe, by Mr. R. Taylor, surgeon to the Central London Ophthalmic Hospital, and which has scarcely, I think, been adopted so frequently as it deserves. It is highly spoken of by Mr. Haynes Walton, in his work on the "Surgical Diseases of the Eye." This style is a straight piece of silver to fit the nasal duct, having at right angles to it, at the upper end, a small arm about three-eighths of an inch in length; it is introduced along the slit-up lower canaliculus, through the lachrymal sac into the duct. The little horizontal arm lies in the channel of the canaliculus, which it keeps open, and prevents the style from slipping out of sight, allowing ready removal when necessary. I have used it constantly, and with great advantage. The canaliculus is slit up in the usual way, and I then either dilate for a short time with the ordinary probe, and then put in the style, or more generally where the case is a straightforward one, introduce the latter at once. Different sizes are required. The style requires to be taken out and cleaned occasionally, and if there be any irritation set up by it, which is not common, the removal of it for a day or two is generally sufficient to allow it to be worn with ease, and I find that patients are so comfortable while wearing it that they often neglect to appear at the end of a month or six weeks to have the instrument removed.

When we think of the very fragile bones by which the lachrymal apparatus is formed, and the danger which must always exist lest the passing of an instrument should injure them, or bruise their delicate lining membrane, the consequent swelling of which would increase, instead of lessening the evil, it must be evident that the use of a probe in the situation demands the greatest gentleness. A plan therefore which so much simplifies the instrumental treatment of many of these frequent, painful, and troublesome cases is a real gain.—*Lancet, April* 24, 1875, *p.* 570.

65.—THE THERAPEUTIC VALUE OF THE BALSAM OF COPAIBA IN SOME EYE AFFECTIONS.

By A. R. Hall, Esq., Surgeon, Army Medical Department.

[Copaiba is a valuable remedy in a variety of diseases, and not only in gonorrhœa or as a diuretic simply.]

One of the most satisfactory instances of the effect of any medicine that I ever met with was in a soldier of the Buffs, suffering from iritis, in India. In June 1872 I was asked by Surgeon-Major Collis, of that regiment, and Staff Assistant Surgeon Tothill, to see a patient in their hospital. I found the right eye highly inflamed, and the whole of the anterior chamber *filled with pus.* Of course, vision was entirely lost. The patient had suffered from repeated attacks of syphilis, and he had been treated with calomel and opium counter-irritants, and a variety of alteratives, but with no good result. I certainly thought that the eye was gone beyond redemption; but I said that I had seen such good results following the exhibition of the balsam in iritis, that it might be tried as a last resort. Two drachms were therefore ordered, in mucilage, three times a day. Two days after, the pain he had been suffering from subsided: daily, the pus could be seen to be gradually disappearing. At the end of ten days he could see the length of the ward, and after twenty days the eye was quite well. A short account of the case was published by Mr. Tothill in the Indian Medical Gazette for September 1872. As he writes, the balsam had acted "like a charm" and all who saw the man were convinced that, but for it, the eye would have been destroyed. I had repeatedly given it in cases of iritis, and almost always with benefit, but I never expected that it would act so well in this case.

I have been in the habit of giving it in all cares of iritis and sclerotitis for some years in India, and found it far preferable to turpentine, as it does not produce strangury, which the latter drug is very apt to do in that hot climate. The horrible pain of sclerotitis, the eye being described as feeling "like a red-hot ball," I have found often to subside after four or five large doses of the balsam, and the inflammation disappear At Seetapore, in Oudh, during the year 1872, I had at one time more than thirty children suffering from purulent ophthalmia, under my care. I treated them all by simply painting the lower eyelids, upper part of the cheeks, and temples, with the pure balsam copaibæ, and they all got well quickly without any damage to the eyes. Mr. C. Macnamara, the ophthalmic surgeon to the Calcutta University Hospital, in his work on Eye Diseases, recommends the balsam in iritis; but I do not think that the advantages that apparently follow its use in almost all cases of inflammation of the eye are generally recognised.—*Practitioner*, *April* 1875, *p.* 241.

66.—REMOVAL OF FOREIGN BODIES FROM THE EAR, AND COUGH FROM AURAL IRRITATION.

By Dr. John Cleland, Professor of Anatomy and Physiology, Queen's College, Galway.

Looking over the chapter on "Foreign Bodies in the Ear" in the recently translated work of Von Tröltsch, I remark the objection made to instruments as being liable to drive the offending body inwards, and the preference given to a "properly directed stream of water," and am led to bring under notice an observation which I made twelve years ago serving to show what the proper direction is in which an instrument should be made to act. When I was demonstrator in Glasgow, a student came to me in much alarm with a pea in the auditory meatus which had been flung in a class-room, and had been driven far in towards the membrana tympani by the efforts of one of his fellow-students to remove it. It fitted sufficiently accurately that there was no space for the introduction of an instrument behind it. I had no instrument be-de me but a straight needle for microscopic purposes. I touched the upper margin of the pea with this, endeavouring to introduce the needle behind the pea, when the pea rolled somewhat and receded. It then occurred to me to place the point of the needle beneath the pea, and to my great surprise I had scarcely begun to insinuate the point of the needle when the pea flew out with great violence. Anyone may repeat the experiment as I have done, with a pea, a tube, and a needle, and may easily arrive at the explanation of what happened in the case which I have mentioned. If the needle be placed above the pea, it presses on the uppermost part of the sphere. By a movement of combined pressure and withdrawal the pea may then be made to roll outwards for a little distance ; but in this movement needle and pea move together, so that the point of the needle, continuing to press on the portion originally uppermost but now rolled outwards, ceases immediately to act in a purely downward direction, and jerks the pea back towards the membrana as soon as the increasing pressure inwards exceeds the resistance of friction against the floor of the tube. But if the point of the needle be placed below the pea, it raises it up ; and if it has been insinuated in the smallest degree beyond the lowest part of the sphere, and be on a higher level than the handle, the pea tends to roll out over it. It is not, however, essential that the point of the needle be on a higher level than the handle, provided only that the needle be properly insinuated in ; for as soon as the handle is depressed so far that the point is at all inclined towards the roof of the tube, the pea is placed between two inclined planes, from between which it is expelled with force.

The circumstance that in the same chapter of the work above referred to allusion is made to the occurrence of coughing from irritation in the ear leads me, while pen is in hand, to notice a curious enough example of this. The membrana tympani of my own right ear was perforated by suppuration in scarlatina at three years of age, and otorrhœa continued for nine years. There is one particular spot of limited extent in the floor of the meatus, about an inch from the outside, and not extending inwards to the membrana, nor at all to the sides or roof, which, when pressed on by an instrument, produces uncontrollable and most violent coughing. It is not more tender to the touch than the other parts of the meatus equally far in, or the corresponding parts in the other ear which produce no such phenomenon. It is of some importance, physiologically, to note, what may not have been observed in such cases hitherto, that the immediate effect of the aural irritation is a peculiar sensation in the throat, referred to the back of the larynx ; that is to say, it seems further back than the tickling sensation which produces an ordinary cough. This, therefore, is not a simple reflex action in which the irritation conveyed by one sensory nerve acts immediately on a motor centre governing another part. A precisely similar phenomenon may be occasionally observed when the pressing open of an acne on the ridge of the nose causes the sensation which brings on a sneeze.—*Lancet*, *Dec.* 5, 1874, *p.* 797.

DISEASES OF THE SKIN.

67.—ON A CASE OF HERPES ZOSTER TREATED WITH ZINC PHOSPHIDE.

By Dr. J. Ashburton Thompson, Surgeon at King's Cross to the Great Northern Railway Company, &c.

A. B., a youth, aged 18, was under treatment for an indolent ulcer of the right shin, the result of an injury inflicted some weeks previously. He was thin and pale, suffered loss of appetite in addition to other symptoms of general debility, and appeared to have been originally endowed with a feeble constitution. He pursued a sedentary occupation. He had been treated for some time with an iron mixture, when, on one occasion of consultation, he complained of severe pain in the right chest wall, which had begun forty-eight hours before; and, on examination, some patches of herpes were discovered. They were four or five in number, of which that furthest back, situated on a level with the tenth dorsal vertebra, showed some vesicles already containing a milky fluid. The remainder were transparent. The most anterior patch was incipient; a few vesicles were discoverable, but they were quite small. The rash coincided with a line exactly transverse to the axial line of the body. A severe pain was complained of, and was described in terms usually applied to nerve pain. To take, in addition to the tonic already prescribed, one-third of a grain of zinc-phosphide every three hours.

On the third day of disease, or about the end of the twenty-fourth hour of treatment, it was observed that many of the vesicles in the older patches were shrivelled, while one or two were actually dry; the anterior or youngest patch had aborted, and there was nothing to be seen in the situation it had occupied but some redness, and the remains of those vesicles which were in course of development on the previous day. The pain was now so much lessened as to be inconsiderable.

On the fourth day of disease, the treatment having been pursued during forty-eight hours only, all pain had gone, and the progress of the eruption had ceased. In a few days more nothing was left but a little redness of skin over the older patches and some roughness. It is not unusual to see herpes zoster abort in a somewhat similar manner to that just described. But the process is observed only in persons who are strong and otherwise healthy; nor is it completed until about the sixth day. The termination of this case is therefore not to be ascribed to a natural process of resolution.

I have elsewhere treated of the power possessed by phosphorus over certain forms of neuralgia. In those cases in which the nerve-pain has a special relation to debility, this drug effects a cure with a certainty and rapidity which approximate its action to that of a specific remedy. This is most true when the debility is attended by marked anæmia, whether that be the result of hemorrhage, or the less direct result of other causes. In the case under consideration these conditions of anæmia and nerve-pain were coincident; and notwithstanding that the occurrence of an eruption in this disease points to some modification of the ordinary conditions of nerve-pain, which do not involve any lesion of the skin, yet the latter was successfully treated by that drug which I have found most effectual in simple asthenic neuralgia. This result ceases to be remarkable when it is remembered that although intercostal neuralgia very frequently accompanies herpes zoster, it is not an essential of the disease. Considerable difference of opinion exists as to the percentage of cases in which the pain and the eruption concur. The cutaneous nerves may, nevertheless, have a direct connection with the production of this rash; and that being so, it becomes plain that two conditions of nerve may exist in the same disease, of which one is not invariably present. As for the other symptom; *herpes*, it is true, cannot be recognised but by the eruption; but, to generalise a little more widely, is it not probable that the symptom which lends a name to the disease, is also a symptom merely—an accident liable to attend upon many neuralgias, which are known by this descriptive term alone? Some support is offered to an answer in the affirmative by the case related; for, not only was the pain at once and speedily removed by the remedy appropriate to it, but simultaneously *the eruption* aborted; that is to say, that the symptom which observation has shown to be accidental was removed; that the symptom which warrants the appellation of *herpes* was removed too; that the latter, therefore, is also an accidental symptom, and that cure was effected by the specific action of phosphorus upon an unascertained condition of the cutaneous nerves. On this view the disease called herpes is a nerve disorder, sometimes evidenced by pain alone (neuralgia), sometimes by a rash only (herpes), and sometimes by the two together. To complete the investigation which is suggested by these remarks, it will be necessary first to confirm the above observations in a number of similar cases, and then to observe the effect of phosphorus on herpes uncomplicated by pain.

A more direct connection exists between the state of the nerve-trunks and skin eruptions than is generally taken into account; and phosphorus has special powers over this part of the nervous system. Eruptions not distinguishable from the diseases psoriasis and eczema have been known to occur on the surface of limbs of which the main nerve trunk had sustained injury from accident or disease, and to be confined to that situation ; and further than this, to have disappeared upon the removal of the local nerve disease. It is over the nerve trunks, and more particularly when they are superficial, that phosphorus exerts special powers. This is exemplified in cases of acute neuralgia, occurring in persons who are otherwise in good health. A person employed in exposed situations sustains a continued application of cold and damp air to the side of the face, and is shortly attacked by neuralgic pain in the trifacial nerve. Such a case as this will yield with rapidity and certainty to a few stimulant doses of phosphorus. The cause of the attack is local—the attack confines itself to a definite situation, and the remedy removes the condition in too short a time to allow of any modification of the general state of the patient. Although this seems to point to a specific action of the remedy upon the *nerve* affected, it seems to me extremely probable that the morbid condition involved is in fact some interference with the blood supply to it. This, I think, is in a measure supported by the analogy which may be observed between the action of croton oil in this disorder and that of the drug under consideration. No more ready remedy for such an attack of acute trifacial neuralgia as that referred to is known than this drastic purgative; but no specific powers are, so far as I am aware, accredited to it. It is therefore possible that it acts in virtue of its power as a drastic to disturb the balance of the circulation, and in this way may restore that to the affected nerve of which it has been deprived by the paralysing effect of cold, and which is essential to its healthy action. Notwithstanding this, however, a distinction may be drawn between this action of phosphorus, apparently most directly exerted upon the state of the capillary circulation of the nerve trunk itself, and the power which it possesses of modifying the general capillary circulation of the surface.

Bearing in mind these four modes of operation on the skin, that is, by expanding its capillary vessels, by contracting them or giving tone to them, by operating on it more directly through the cutaneous nerves themselves, or lastly, by remedying a general state of a nutrition, it becomes plain that remedial effects may be anticipated of this drug in a variety of skin disorders. Thus, for example, in the first manner it may be used with marked effect in promoting the rash of measles, scarlet fever, typhus, and other eruptive fevers ; in the second it may be expected to operate favourably upon psoriasis, which is one of the congestive skin diseases ; in the third, as it was observed to act in the case above described, in arresting the normal course of *herpes zoster ;* and, lastly, it may be expected to afford signally successful results in those eruptions which depend upon a general condition of mal-nutrition and anæmia.

Practically, phosphorus has been found by Drs. Broadbent and Eames to be possessed of powers over chronic skin diseases, which are superior to those of arsenic in the rapidity with which they are evinced. Psoriasis, eczema, acne indurata, lepra, lupus, and scrofulo-derma have all of them, and that in more than one or two instances only, yielded to this drug with marvellous rapidity, notwithstanding that in some cases the affection was of old standing. In the face of the probabilities above indicated, and of the facts last referred to (which are well known) it is not quite clear for what reasons its employment has not been more generally adopted. Probably the difficulty of administering free phosphorus has hitherto contributed a sufficient obstacle ; a word therefore upon the form best adapted to the present purpose will not be out of place.

It will be observed that the case of *herpes* was treated, and was treated successfully, with the phosphide of zinc. The decomposition of this drug within the body affords the effects of free phosphorus ; in my opinion, ten parts of zinc phosphide are equivalent in therapeutic effect to one part of the uncombined element. The other phosphides and hypophosphites are not ascertained to afford the effects of free phosphorus. This compound, which, given in a dose of one-third of a grain repeated every two or three hours, is, generally speaking, sufficient to remedy such an attack of neuralgia as accompanied the rash in this case, and was therefore employed in it, is not that which appears to me best adapted for the treatment of other forms of skin disease. Many of these attend upon states in which advantage may be gained from the use of cod liver oil; and, at the same time, that a solution of solid phosphorus in oil is that form which best ensures the absorption of the drug in its free and most active state, this fish oil is that one which alone does not expose the element to changes which are either destructive of its remedial powers, or render it dangrous to the patient. These, therefore, are two reasons for employing in such cases a solution of the drug in cod-oil; a third may be found in the fact that such a solution possesses neither the smell nor the taste of the element. Still, patients are found who will not or cannot take the solvent; under these circumstances, no more elegant or effective means of exhibiting phosphorus exists than a concentrated form of the same solution enclosed in little gelatine envelopes forming what are known as "*perles.*" These, it need scarcely be said, are quite tasteless; and if taken immediately after meals, cause little or no phosphoric eructation.

The dose of phosphorus which may be given with advantage will vary strictly with the object in view. In the example before us, acting on my knowledge of the treatment most desirable in acute neuralgia, it was attempted at once to induce the stimulant action of the drug, by giving full doses of the zinc-phosphide; and this result being obtained, the disease was cured. So, in the eruptive fevers, it is the stimulant effect of the drug which it is desired to produce, and it must be attempted in the same manner—by exhibiting full doses from the beginning of treatment. As a rule, for this purpose I should be inclined to prefer phosphorus in an alcoholic or ethereal solution, given in a dose equal to one-twelfth of a grain, and repeated every four hours. But where the object in view is to give tone to the cutaneous vessels, or to improve the general nutrition of the body, a much smaller dose of the element should be employed, and its administration must be continued for long periods. In these cases, if the patient can be persuaded to swallow a large dose of cod liver oil, he may be allowed to take the thirtieth part of a grain of phosphorus, dissolved in from two to four drachms of it, thrice daily. If, however, this amount of the solvent be objected to, or be deemed unnecessary, the "perles" may be employed. These can be obtained containing the dose named in about four and a-half minims of oil; but, if these preparations be employed, I prefer to administer the same dose in a larger number of capsules (containing a more dilute solution), since, by this means, much unpleasant eructation may be avoided, to which the more concentrated solution does give rise, notwithstanding every precaution.

In this way free phosphorus may be administered for long periods with perfect safety, provided the quantity employed does not exceed one-fourth of a grain *per diem*—an amount which, probably, it will seldom be necessary to employ in the treatment of skin diseases. Nor, except under special circumstances, will it be found necessary to seek any other method of exhibition.

Thus, although it is possible that with further knowledge of the effects and mode of action of phosphorus in cutaneous disorders, some other more advantageous mode of employing it may be devised, for the present, at all events, I consider that this one fulfils all the necessary conditions of safety and physiological activity. It is in these matters that the pharmaceutical preparation of phosphorus has, until quite recently, failed; and since any imperfection in the preparation employed leads on the one hand to the serious risk of the patient, or, on the other, to disappointment in the result of treatment, probably a knowledge of this method of exhibition will lead to a further and more systematic inquiry into the value of phosphorus as a remedy in chronic skin disorders. The result of treatment with the remedies at present at command is scarcely so satisfactory as to render such an investigation superfluous, while the result of observations hitherto made has, so far as they are reported, been remarkably successful. From a consideration of these notes and some knowledge of the physiological action of the drug, I scarcely doubt that phosphorus will acquire a just reputation in the treatment of chronic skin diseases not inferior to that at present enjoyed by arsenic.—*Glasgow Medical Journal, Oct.* 1874, *p.* 460.

68.—ON PSORIASIS PALMARIS.

By EDGAR A. BROWNE, Esq., Hon. Surgeon to the Eye and Ear Infirmary, and Dispensary for Skin Diseases, Liverpool.

[Few diseases of the skin better repay treatment and attention to details of management than psoriasis palmaris, few are more hopeless if left to "nature," or treated on wrong principles.]

The following case may serve as an example :—A gentleman in easy circumstances, but of a nervous anxious disposition, came under my care. He had been subject to the disease for many years, in the right hand especially, which at his first visit had the epidermis of the palm and portions of anterior surface of fingers torn, broken, and fissured in all directions, the subjacent skin being inflamed and thickened ; nowhere would the scales scrape off in silvery flakes, no sensibly moist exudation was visible. The scales were constituted by shreds of epidermis, detached at their circumference, but attached by their centres. He had been under many practitioners, who seem to have had a suspicion of syphilis—a suspicion not confirmed to my mind by investigation either of objective symptoms or the patient's history. Taking into consideration the bilateralism of the disease, its recurrent nature, and the nervous type of the patient, I placed him at once on six minims of Fowler and half a drachm of liquor potassæ, and ordered him to rub in an ointment composed of seven parts zinc and one mercurial. I may mention that mercury was not used antisyphilitically, but in accordance with my usual local treatment of chronic exudative diseases accompanied by much thickening. In three weeks the physiological effects of arsenic were beginning to show themselves, the infiltration of the skin much reduced. The medicine was diminished to one half, and a weak preparation of oil of cade rubbed into the part affected. In five weeks a slight pinkiness of the palm and an imperfect line of desquamation along the ulnar margin of the hand were the only evidences of the disease left. He considered himself cured. This case yielded much more readily than usual to treatment, owing probably to the fact that the patient was in sufficiently easy circumstances to keep his hand at rest till the cure had commenced. It is far otherwise with workmen who cannot forego the use of their hand. Like eczema in other parts of the body it is much influenced by external irritation. I have almost always one or two workmen in attendance at the dispensary ; they derive benefit from the use of ointment, but are practically incurable—unless on strike. In a less degree this applies to patients of all classes, and it is a useful practical fact to remember that if a case is more than usually obstinate, and there is no mistake in the diagnosis as regards syphilis, some external source of irritation is probably at work. And here we see the importance therapeutically of regarding this affection as eczema rather than psoriasis. The latter disorder is one produced by causes acting from within ; external irritation seems to play no part in its production, nor has it been experimentally imitated. On the other hand, eczema is especially determined by external agencies and easily produced experimentally. Hence, although the local treatment of psoriasis is very like the treatment of chronic eczema in principle it must differ in degree. The somewhat rough and severe handling which is often the only mode of removing chronic psoriasis is in itself sufficient to maintain or even to increase the violence of an eczematous attack.

The main points to be attended to in the treatment are obvious, but I may, perhaps, briefly glance at them.

The hand must be kept at rest, the employment of tools, driving, fingering samples, and so forth, absolutely forbidden. The horny layer of the epidermis is thicker and less porous than in other parts, and should be softened by prolonged packing with wet compresses, solutions of potassa fusa, soft soap, or borax, according to the severity of the case. Except while these are being applied the palm should be kept thoroughly anointed with grease ; if there is much infiltration and thickening of the corium an ointment containing mercury should be employed—weak citrine, the mercurial ointment one to seven or six, or the oleate of mercury, full strength. When the inflamed patches are very indolent I think the best results are got with the iodide of sulphur ointment rubbed in frequently. Any spots resisting the action of these remedies should be lightly touched with the acid nitrate of mercury so as to produce a raw surface. The case will be completed as in chronic eczema of other parts by stimulation with tar, the oil of cade being the nicest preparation. Some discrimination is required in apportioning the amount of soothing or stimulating treatment necessary in any given case, but as a general rule a case that remains stationary under soothing applications requires a stimulant.

As regards the general treatment: bilateral recurrent chronic cases are favorably influenced by arsenic; it should be given in full doses aided by alkali, or if intestinal irritation is easily set up guarded with a little bismuth and tiny doses of opium. The patients will frequently be found suffering from some error of assimilation or excretion tending to produce that condition of debility most favorable to the onset of eczema.

The habit of counteracting with alcohol the torpidity induced by a sedentary life is often a great obstacle to success. The patients obstinately refuse to believe they can maintain their strength without stimulants, or that they take more than is absolutely necessary for their well-being. A glass or two of wine at dinner does no harm—may possibly do good by aiding digestion, but beer and spirits and drinking between meals should be forbidden. No other dieting is, as a rule, necessary.—*Liverpool and Manchester Medical and Surgical Reports*, 1875, *p.* 186.

69.—THE TREATMENT OF SCABIES.

By Dr. Robert Liveing, Physician for Skin Diseases to the Middlesex Hospital.

There are three principal methods of treating scabies: 1. By sulphuret of potassium baths ; 2. By sulphur vapour-baths; 3. By sulphur ointment. It may be a satisfaction to those who cannot conveniently use the sulphur-baths, to know that the treatment by inunction of sulphur ointment is the most efficacious of the three methods.

There are three mistakes commonly made in treating scabies, especially in private practice: 1. In not applying the remedy over the skin of the whole body, except the head ; 2. In using the ointment of the British Pharmacopæia, which contains one part in five of sublimed sulphur, and is too strong, especially for children ; 3. In using the ointment for too long a time, and thus producing an irritable state of the skin. This often happens when people attempt to *treat themselves* for what they believe to be the itch. On the two latter points, most experienced observers agree: but on the former some difference of opinion exists. In a lecture recently published, my friend Dr. Tilbury Fox remarks: "It is a rule of prime importance in treating itch, to accurately determine at the outset how far the acari have disseminated themselves about the body. The reason is obvious. There is no need to apply parasiticides to parts in which the acari do not exist, because the irritation and eruption elsewhere are due to sympathetic action ; and these irritated parts will get well, if the acari be destroyed, and they do not require the use of irritant remedies, such as parasiticides are, but soothing remedies. The practice is to apply the remedy to every part of the body where eruption exists in case of itch. Clearly this is wrong, from what I have just said. My rule is this: if the disease be recent, if it be only slightly marked, if it began about the hands, and there be no cuniculi about the penis, I order the parasiticide to be rubbed into the interdigits, the palm of the hand, and the wrists, and I apply a soothing lotion to all other irritable parts of the body. . . . I repeat, then, by way of summary, in private practice, if the disease be slight and recent, use the parasiticide to the hands only, and soothe the other parts with some emollient or astringent lotion or ointment."

In the first place, I would remark, that in private practice it is in many cases next to impossible, and quite unnecessary, especially in women and girls, to examine the abdomen, thighs, and every part of the body, to ascertain how much of the eruption is due to scabies, and how much to sympathetic action.

The best plan of proceeding is, in my opinion, as follows. Having once ascertained that scabies exist, order one thorough application at night of mild sulphur ointment to the whole of the body, except the head, and direct the patient to sleep in the drawers, jersey, and socks that he has used the day before ; this will secure the death of any stray acari about the body or in his underclothes; in the morning, he should use a warm-bath. The after-treatment should consist of the local inunction of the ointment, into those parts only which are especially affected, for two or three nights. In all mild cases, the cure by this plan is quite certain, and is attended with very little inconvenience. The objections to sulphur-ointment are its irritating qualities and its smell. The first is avoided by using an ointment made with half a drachm to two scruples of the precipitated sulphur to one ounce of lard. The precipitated is in finer powder, and less gritty than the sublimed sulphur, and more efficacious. A great part of the inconvenience arising from the smell of the sulphur may be avoided by using it only during the night. A drop or two of sandal-wood oil will quite disguise the smell. In cases of long standing, it is necessary to have the clothes baked ; but a temperature of 190 deg. to 200 deg. Fahr. is quite sufficient, and the bed may be easily fumigated by using a little sulphur sprinkled on the cinders (not too hot) of a warming-pan.

It often happens that the irritation of skin remains after the scabies is cured, and thus induces people to go on with the sulphur treatment too long. Instead of doing so, a mild stavesacre ointment should be used, made with the oil of stavesacre and lard ; this relieves the itching, and at the same time will kill any stray acari that may have escaped death from the sulphur. —*British Medical Journal, Jan.* 30, 1875, *p.* 137.

70.—TWO CASES OF ALOPECIA SUCCESSFULLY TREATED BY LOCAL STIMULANTS.

By E. C. Robson Roose, Esq., Surgeon to the Brighton and Hove Provident Dispensary.

Case 1 was that of a married man, aged 54, with a large family of perfectly healthy children. He had always enjoyed good health until about a year previously when he experienced a sudden and severe nervous shock. Shortly afterwards, he first noticed symptoms of baldness, his hair becoming thinner and falling off, particularly over the head ; so much so, that in a few weeks his scalp presented a perfectly white and shiny appearance, with no vestige of hair left of his rendering the use of a wig necessary. The disease continued gradually to spread, until the whole body was more or less implicated. When he applied to me, he stated that he had been under treatment for some months, but with no benefit; and, to use his own words, "had been discharged as incurable." . On making a careful examination of his body, I found a condition of almost general alopecia to exist, the skin having an uniform white, smooth, and shiny appearance. I put him under a strictly nutritious and digestible dietary, and prescribed tonics to improve his general health. Locally to the scalp I painted on some blistering fluid, repeating the application once a fortnight, and ordered the following lotion ; carbonate of ammonia one drachm, tincture of capsicum one drachm, rectified spirit one ounce, glycerine one ounce, and rose-water to eight ounces, to be applied freely over the body night and morning. For two months I could distinguish no appreciable improvement in his condition; but, after that period, new hair, very silky and quite white, began slowly to grow, and became thicker and stronger until the body and head assumed all the appearance of health, being well covered with hair over the different regions, although the colour of that hair, originally dark brown, was now permanently quite white. In this condition he was discharged as cured after seven months' treatment. About three months afterwards I met him, and he stated that he had experienced no return of the disease in any way. I may here observe that, in this man's case, there was no history of acquired or congenital syphilis, or, in fact, any apparent cause for the disease beyond the shock he mentioned.

Case 2 was that of a married woman, aged 32, with five children, who applied to me with alopecia circumscripta of two years' standing. Her husband and children appeared quite healthy, and she stated that she had never known a day's illness, and that the disease seemed in no way to affect her general health. I could obtain no information as to the origin of the disease, and there was no evidence of any constitutional disturbance that could have caused it. The scalp, upon examination, presented a series of white, smooth, ivory-like patches, bounded irregularly by healthy hair. This case was treated upon the same principle as the former, the blistering fluid being applied at intervals of three weeks, although not with the same speedy effect, as, from the soreness of the scalp, the treatment had to be stayed from time to time. The disease also appeared to be more intractable, it being upwards of seventeen months before she was discharged thoroughly recovered.—*British Medical Journal, Nov.* 14, 1874, *p.* 618.

SYPHILITIC AFFECTIONS.

71.—ON THE TREATMENT OF SYPHILIS.

By R. Brudenell Carter, Esq., Ophthalmic Surgeon to St. George's Hospital.

The instances in which we are led by iritis to the discovery of an early stage of syphilis present no difficulty with regard to treatment, except such as may arise from the incredulity or the circumstances of the patient. We have but to cure the iritis in the ordinary way, and to apply to the syphilis the principles which Ricord has so clearly stated. If the patient will not take mercury for the necessary time, so much the worse for him; and if he is forewarned of the probable consequences the surgeon is relieved of all responsibility. That the mercury should be cautiously given, and in such a way as to avoid the production of its poisonous effects, is a matter of common sense on which it is unnecessary here to dwell.

When the period of primary syphilis has long passed away, and when mercury has been given for a few weeks, it is much more difficult to decide upon the course to be pursued. We have, then, two remedies between which to choose, mercury and iodide of potassium. Of these, iodide of potassium is the more rapid in its influence upon the symptoms actually present, but it probably possesses little or no power to modify the systemic malady. Nothing in clinical history is more remarkable than the rapid amelioration of the symptoms of late forms of syphilis under the use of the iodide; nothing is more certain, generally speaking, than their recurrence in the same or in some modified form. Mercury, on the other hand, will be slower in producing its first action, but more effectual as against the syphilitic taint; although it is not proven that syphilis of long standing can be cured by mercury, at least with anything like the same certainty as the earlier stages of the disease. It is in the eye, however, that the immediately curative effects of mercury are most remarkable; and it is from its visible action upon iritic effusions that many inferences have been drawn with regard to its supposed kindred action in parts of the body that are concealed from view—as, for instance, in the pleura. I am indebted to my lamented friend the late Dr. Anstie for the suggestion that these inferences may possibly be in some degree erroneous. He believed that mercury has some special elective affinity for, or special action upon, the parts which are supplied by the fifth nerve, and did not admit that its manifest influence upon iritis is necessarily an evidence that it will exert a similar or equal influence elsewhere. In support of this view it may be said that the poisonous effect of mercury is displayed first upon the gums, which derive their nerve supply from the source indicated; and we may also find something analogous in the deposition of lead in the gums, coupled with its tendency to produce atrophy of the optic nerves. The suggestion is one upon which I need not dwell, but it will serve to call to mind the powerful effect of mercury upon the eye, as well as the possibility that the argument from the eye to other organs may be fallacious. Returning to the question immediately under consideration—the choice between mercury and iodide of potassium—it may, perhaps, be said that the best rule of practice is to inquire whether the local changes in actual progress are such as to inflict irreparable injury unless they are speedily arrested. If they are, iodide of potassium should be given in the first instance and should be continued until a distinct impression is made upon the case; when it may be laid aside, and mercury given instead of it, with the hope of anticipating subsequent phases of mischief. If the changes in progress are not of this pressing character, it may often be best to give mercury from the first. A corneal ulcer threatening to spread or to perforate, so that in two or three days it might permanently impair the eye as an organ of vision, or an amount of effusion in the nerve disc likely to lead to speedy atrophy by its interference with the local circulation, would either of them call for the most rapid influence that the iodide could afford. A mere haziness of the cornea, or a turbidity of the vitreous body, or a limited amount of retinal or choroidal change, may be taken to illustrate conditions in which it would be legitimate to wait for the more gradual operation of mercury.

The mode of administering iodine of potassium has been already described; and, concerning the administration of mercury, there is nothing to be said which has any special application to the eye. The skill of modern pharmaceutists has multiplied preparations; but by these I have not been tempted to forsake old and trusted friends. Sir Astley Cooper was wont to tell his pupils that if they were much addicted to new remedies two results would inevitably follow; first, they would not cure their patients; secondly, they would have no patients to cure. For the most part I am accustomed to gain a knowledge of new remedies chiefly by reading or hearing the accounts given of them by others; and I feel that the weapon which I have learnt to use is that which, in my own hands at least, is most likely to do good service. In order to obtain a mercurial influence quickly, I use either blue pill, or inunction with blue ointment, or both together; and, for prolonged administration, the perchloride. Inunction is often useful for adults, but its especial value is in the case of young infants suffering from a combination of purulent ophthalmia and inherited syphilis. For them, the plan I prefer is to smear every day a little fresh ointment on a strip of flannel, about an inch and a half wide, which is buttoned around the abdomen, next the skin, and worn constantly. Mr. Hutchinson is accustomed to have the ointment rubbed into the soles of the feet, the only part of an infant's skin on which it never produces irritation. To this there are no other objections than the trouble of protecting the hands of the rubber, and the ill-consequences which may follow if the protection should be incomplete. Together with the pill or the inunction, except in the case of infants, it is wise to employ a little opium to check griping or purgation; and the perchloride combines admirably with iron, or quinine, or arsenic, or with any two of them, and is generally more effective in combination than alone. To this armamentarium I am beginning to add a new remedy which is of sufficiently good repute to deserve a trial—namely, Staub's chloro-albuminate for hypodermic injection; but I cannot yet speak of it from an experience large enough to form the foundation of an opinion. Calomel, with precautions and under conditions that will be described when discussing the diseases of the cornea, is often useful as a local application; but given internally, it has no advantage over blue pill, and the calomel-vapour baths, so much extolled by my esteemed colleague, Mr. Henry Lee, have appeared to me to be somewhat uncertain in their operation, and sometimes to be too energetic. For these reasons they fail to fulfil what I regard as essential to a good method of mercurial treatment—namely, that the surgeon should hold the reins of it in his hand. We are much indebted to Mr. Haynes Walton for the force and clearness with which he has pointed out the boundary between the remedial and the poisonous action of mercury; and this boundary the prescriber should never transgress. Save in the exceptional cases of idiosyncrasy, in which mercurial poisoning may be produced by a single moderate dose, there should be no such thing as a sore mouth resulting from treatment. The slightest line upon the gums indicates a point beyond which the medicine should not be pushed; and the highest art of administering mercury is to keep the patient, as it were, on the brink of this line, without permitting transgression of it. For this purpose the inexperienced practitioner must be content to feel his way; and the most experienced will constantly find that he can do little more.—*St. George's Hospital Reports*, *vol.* vii., *p.* 112.

72.—ON GLEETS.

By Berkeley Hill, Esq., Surgeon to University College Hospital.

To begin with the commonest cause of gleet, inflammatory patches, of which the anatomical conditions are as follows:—If the interior of the urethra be illuminated by the endoscope, it will be seen that the greater part of the mucous surface is pale-pink in colour, slightly shining from mucous moisture, but that at one part or more the colour is full red, sometimes purplish red. The red patches are less elastic than the natural tissue, and contract as the instrument is withdrawn, or yield as it is pushed down the canal less evenly than the healthy tissue. The chafing of the instrument over these inflamed areas causes a little oozing of blood, and when that is wiped off the surface looks rough or raw. When the affection has lasted some months the redness is much paler, and often streaky. The most common position for these patches is the bulbous portion—that is, four and a half to six inches from the meatus externus, according to the length of the urethra. This, you recollect, is the usual situation of stricture. The extent of the inflamed surfaces may reach an inch, but is rarely more than half an inch, and is commonly less. Perhaps, also, most frequently the red patch is single, though now and then there is a patch in the fossa navicularis, or in the penile urethra between the fossa and the bulb. This condition of the urethra is the forerunner of organic stricture, for nothing more than time is needed to convert these patches into tough fibrous tissue that, by not yielding when the flow of urine expands the canal, constitutes stricture.

When the patient begins to describe his case, he tells you that he had clap some months, or even a year or two, before, but has never got quite rid of his discharge, notwithstanding that he has tried a great variety of remedies. Sometimes he will say he has been apparently well for a short time, but the discharge has begun again without any fresh exciting cause; meanwhile he has no pain, no difficulty in passing water, and no need to pass it oftener than usual, and the urine is clear and light-coloured. If the gleet be due to inflamed patches, they may generally be discovered without introducing the endoscope, which is always more or less painful to the patient and troublesome to the surgeon. Put the patient on his back, and introduce a bullet or olivary bougie or sound with slender graduated stem, of a size that will just pass the meatus without pain, and push it slowly along the urethra. As it reaches an inflamed spot there will be a slight resistance, and the patient will feel a smarting pain while the bullet passes over the patch, but when this is left behind the resistance and pain both cease. By reading the number of inches which have been introduced the situation of the inflamed spot can be at once ascertained. Continue the introduction of the bougie until the bladder is reached, noting any other resisting points, should they be met with. The bougie is next withdrawn, and the situation of the tender points is again announced as the bullet passes them in its journey outwards. The next step depends a good deal upon the amount of tenderness, and the degree of resistance the bullet experienced in going to and returning from the bladder, and on the aspect of the discharge. When the pain is pretty acute, the resistance very slight, and the discharge white and tolerably thick, there is probably more inflammatory congestion than induration of the mucous membrane, and it may be dispelled commonly by the following method. Take this bullet-ended catheter with graduated stem, and when the bulb has reached the inflamed spot inject through it two or three minims of a strong solution of nitrate of silver (ten or twenty grains to the ounce of water) or of perchloride of iron, though I prefer silver. If there is more than one point of inflammation, inject those nearest the bladder first. Before doing this it is well to let the patient empty his bladder and to direct him to wait two or three hours after the injection before doing so again. The consequences of this application are rarely serious—seldom exceed a few minutes' sharp hot pain, and require no treatment beyond abstention from active exercise, such as cricket, riding on horseback, &c., for twenty-four hours. If the patient feels scalding, or notices a drop of blood on his shirt when he makes water, he should get into a warm hip-bath before he goes to bed, and take a few doses of simple saline during the next day or so. Usually, and when the injection answers best, the discharge increases for two or three days, and then diminishes—if it does not stop altogether—to less than it had been before the treatment was begun. A weak astringent injection should then be used in the ordinary manner for three or four days, when the caustic solution may be applied again as before. At the end of ten days the discharge is often reduced to a few shreds in the urine, and may be finally disposed of by several methods. If there is still a little cling or hitch as the bougie passes the spots that were before tender, there is probably some induration, and the passage of a steel sound, beginning at No. 10 and gradually increasing the size to No. 12 or 13, two or three times weekly for a fortnight, will complete the recovery. But if neither cling nor tenderness be left, the passage of sounds is rarely beneficial; but the introduction of a soluble bougie, such as this I hold in my hand, every evening on going to bed, is often beneficial. These bougies are six or seven inches long, round and smooth, and about the thickness of a No. 6 or 7 catheter, rather brittle when dry, but if dipped for a few seconds in boiling water become flexible and slippery so as to be easily introduced into the urethra. They consist of gelatine covered with mucilage in which is dissolved or suspended the medicament to be employed, such as sulphate of zinc, chloride of zinc, tannin, rhatany, &c.; others have opium or belladonna, either with or without the astringents. They are made in Paris, where they go by the name of "porte-rémède Reynal," and are sold by Roberts, of New Bond Street, and I dare say by other French chemists in this town. The patient passes one every night on going to bed, and ties over the penis a little waterproof hood to prevent part of the gelatine that is slowly dissolved from escaping out of the urethra and soiling his night-dress. By the morning the bougie has been absorbed. They may sometimes be introduced twice daily with advantage, but usually one every night is as frequently as they can be borne. The patient should also take twenty or thirty grains of freshly powdered cubebs every day; and these applications commonly arrest the discharge completely. The general rule in inflammatory patches being, that the more the disease approaches simple congestion without induration of the mucous membrane, the better will local astringents and specific medicines avail; while, on the other hand, when the surface has lost most of its congestion and new tissue has attained some development, specific medicines are of no value, and gradual dilatation is most serviceable, beginning with tapering-ended olivary bougies, which are the safest and least irritating. When the urethra is habituated to the flexible instruments, replace them with steel sounds, properly curved and gently handled. When there is new tissue we have really to deal with organic stricture—a wide stricture certainly, but one that needs only time and neglect to become a narrow and dangerous contraction. An American surgeon, Dr. Otis, of New York, has recently contrived a mode of treatment for these indurations, which he calls "strictures of wide calibre," which I have adopted in some cases with success—namely, where the canal has been dilated by instruments that reach the full normal size of the greater part of the canal, but are not sufficient to fairly stretch the bulbous part, which has naturally a greater calibre than the penile portion, and is the situation where these troublesome affections are usually placed. He introduces an instrument which, while it stretches the part concerned, also nicks or incises it slightly by a cutting edge, which is made to protrude against the tightened membrane. Here is an instrument Coxeter made for me, not exactly a copy of Dr. Otis's, but which performs the same operation in a different way; being the instrument known as Thompson's dilator, only stronger, with the addition of a shoulder-piece, underneath which a cutting edge is protruded. It is also extremely useful to divide strictures that are easily dilated; but which rapidly shrink back after the instrument is withdrawn. By keeping the part to be cut tightly stretched, the stricture cannot yield and allow the blade of the knife to pass by without cutting fairly through the narrowing. This is a difficulty not overcome by several otherwise effectual urethrotomes.

To return to the gleets. Sometimes, though not very commonly, the inflamed patches are elevated into irregular projections of granulations, which not only resist the passage of the bougie, but cause a roughish sensation and a slip to the fingers as the instrument passes over them. If looked at through the endoscope, they are seen to be prominent, uneven patches, which resist the approach of the endoscope tube, and, when exposed, appear as pale-yellowish or greyish masses, much less yielding than the natural mucous membrane in their neighbourhood. The discharge from these is rarely coloured, is very scanty, and resembles gum water. They are said to produce, in time, an obstinately contracting tissue that causes much trouble. Certainly those which have fallen under my care have been extremely difficult to deal with. The methods I have found most satisfactory are the following. They are both no novelties, and one boasts a respectable antiquity. It is to pass a wax bougie in size a No. 7 or 8, three inches of which have been previously dipped in melted cocoa butter in which various stimulants have been suspended, such as five to ten grains of peroxide of mercury to the ounce of fat, or five grains of nitrate of silver. This is inserted into the urethra as far as the granulation patch to be acted on, so that the stimulant shall be brought well in contact with it. The bougie is left in the urethra from ten to fifteen minutes till the cocoanut butter has melted, when the astringent remains in the urethra as the bougie is withdrawn. If this fails, as unfortunately it sometimes does, a more severe proceeding may be resorted to. About twenty drops of solution of nitrate of silver—thirty to forty grains to the ounce of water—may be thrown into the urethra from a syringe like this, and left there.

Another cause of gleet is inflammation of the glands and follicles along the floor and sides of the urethra which sometimes remains long after the gonorrhœa itself has subsided. When the follicles attacked are situate in the anterior portion of the canal, rarely more than one or two follicles furnish a discharge; but if in the prostatic portion, several of the crypts there secrete a thin translucent fluid, which will be better considered separately. If the follicle can be got at readily, a slender silver wire—a catheter stylet, for example,—armed by dipping the end for a moment in melted nitrate of silver, may be run into the little follicle of which the mouths—luckily for this purpose—usually open towards the meatus urinarius. This slight cauterisation has usually to be repeated two or three times before it quite stops the discharge; and is readily practised in the lacuna magna, just within the meatus, in the roof of the urethra, which is perhaps the commonest situation for gleet of the crypts or follicles. But if there is much difficulty in getting at the source of the discharge, which is solely due to the weeping of two or three such sinuses, it is better to let it alone, unless the patient is extremely anxious to have his gleet quite arrested, and prefers the inconvenience of treatment to that of being able to detect occasionally a shred or two of inspissated mucus in the urine. Unlike chronically inflamed patches on the wall of the urethra, these irritated crypts do not cause permanent thickening, nor are they apt, like warts, to excite fresh inflammation of the urethra and to produce a contagious discharge. There is, so far as I know, only one accident to which they give rise—namely, the little sinus or duct may close, and the pent-up secretion gradually form a small elastic swelling, easily detected externally when in the penile part, which sometimes acutely inflames, and an abscess, the size of a hazel-nut, is produced which ultimately opens into the urethra again, but before it does so may impede or arrest the flow of urine by its bulk.

Prostatic gleets.—A mucous or muco-purulent discharge from the prostatic part of the urethra may be caused—1. By extension of gonorrhœal inflammation along the urethra to that part. 2. By congestion and irritation of a sympathetic kind of the prostate body excited by masturbation, excessive coitus, stone in the bladder, piles, &c.

To begin with the first of the above. The prostatic urethra is most commonly affected in gonorrhœa by an acute inflammation of the mucous membrane, known as inflammation of the neck of the bladder; this, being an acute affection, does not properly come under our consideration here. But gonorrhœa also causes a gleety discharge from the prostate in the disorder known as *chronic prostatitis.* The discharge is whitish, scanty, only to be perceived at the meatus urinarius when several hours elapse between the acts of micturition, such as that between going to bed and rising in the morning. Shreds may always be detected in the urine. In a well-marked case the patient has recently had a gonorrhœa in which, as the free discharge, smarting, and chordee subside, a new series of symptoms commence. The patient complains that, while the urine flows, a sensation of heat extends along the whole urethra, often radiating towards the buttocks, but felt most severely at the neck of the bladder when micturition is over. Moreover, at other times he has dull pain at the perineum or near the anus, sense of fulness in the rectum—rather worse when lying down in bed at night than by day when moving about. When in bed the patient finds he must pass water twice or thrice before morning. The act of passing water is also characteristic of prostatic affection. Not uncommonly some seconds elapse before the urine appears when the patient essays to micturate, and usually a few drops of urine dribble from the urethra when the stream ceases, owing to the compressor muscles of the membranous part not performing their office of forcibly emptying the hinder part of the passage. The patient is often tired by less walking than usual, and a long walk generally excites the sensation of fulness or weight in the rectum. The finger passed into the rectum seldom detects any distinct alteration in the size of the prostate, though it may be somewhat longer ; it is generally slightly tender to the touch. The best evidence of this tenderness is obtained by passing a bullet-bougie or sound. If a flexible bougie is used it should be one that contains a leaden wire in its stem, so that, if necessary, the stem may be bent to an obtuse angle of about 135° at one inch from the point. The instrument traverses the urethra without causing pain until the bulbous part is passed ; the patient then flinches, and the instrument is often grasped by spasm of the voluntary muscles surrounding the membranous part. In a few seconds, if moderate pressure be kept up, the instrument passes on a little further, sometimes to hitch again with increased pain to the patient, or, if it reaches the bladder, the resistance suddenly ceases, and the instrument causes pain even when the point has entered the bladder. In withdrawing the instrument, when the bullet is disengaged from the neck of the bladder, spasmodic contraction of the membranous part drives it out rapidly until the bullet is through the triangular ligament, where it lies quietly enough, and all pain ceases. When the prostate is swollen, a rigid instrument with angular bend, will often pass better than a flexible one, which cannot be readily directed. It will be stopped when it has entered the membranous portion, but by rapidly lowering the shaft as soon as the beak has passed through the triangular ligament, the beak is raised against the roof of the urethra, and surmounting the impediment of its progress lying in the floor of the prostatic part, enters the bladder. This tenderness of the prostatic and membranous parts, when the bougie passes through them, is always diagnostic of a prostatic affection, while the muco-purulent discharge and recent existence of gonorrhœa are diagnostic of inflammation, even should the pain and aching and altered stream in micturation be too slight to attract attention.

Next to treat the affection. Here begins the unsatisfactory part. There is no method yet discovered by which a gonorrhœal prostatitis may be cured *tuto, cito, et jucunde.* The patient is relieved of his affection rather by following a regimen that, by keeping away noxious influences, allows full scope to the curative power of nature. To this end the patient's diet should be carefully regulated ; excess of every kind, and alcoholic drinks especially, be avoided, unless the enfeebled condition of the patient renders wine necessary as a stimulant—a state of affairs, in my opinion, seldom really present; but in this it is difficult to get your patient to agree with you. When really needed, one or two glasses per diem of light sherry, good claret, or even good port wine, are the best kinds to use in these affections. The bowels, if irregular, are best cleared by the daily draught of Friedrichshall water—half a tumblerful made warm by adding hot water and taken into an empty stomach while dressing every morning. Purgation is as injurious as constipation, but regular evacuation is necessary. Regular walking exercise of moderate quantity, healthy mental employment, and abstinence from sexual intercourse and lascivious thoughts of all kinds, should be most rigidly practised. For medical treatment, I have found little benefit from drugs. If there is much pain and nocturnal irritation, a very mild anodyne suppository passed into the rectum at bedtime should be ordered—such as one-third of a grain of extract of belladonna, a quarter of a grain of hydrochlorate of morphia, one grain of camphor, and ten grains of cocoa butter, melted together and cast into a conical shape. If the repeated use of the morphia interferes with the action of the liver, an occasional dose of calomel with a little colocynth should be given. While the discharge is whitish or opaque, two or three drops of copaiba in frequent doses is often useful; and when the prostate has lost tenderness if pressed by the finger, one or two drops of tincture of cantharides, in plain water, four times in twenty-four hours, is also sometimes magical in its effect. A good formula for the copaiba is : copaiba, two minims; essence of cinnamon, twenty minims; mucilage, twenty minims ; water, one ounce : four times daily. When all the pain and spasmodic twitching of the compressor muscles have passed away, cubebs, in moderate doses—say, ten grains four times daily—is sometimes useful to check the secretion completely. But at this period local treatment becomes so clearly efficacious that I am not sure how far cubebs is serviceable, for I have not trusted to it alone. For *local treatment* I have most faith in the following :—When considerable pain is felt if the finger is introduced into the rectum, and the prostate feels large and soft, leeches are useful—that is, three or four applied by means of a leech-tube to the mucous membrane within the anus, or if the introduction of a foreign body causes pain, which is often the case, and the requisite skill be not at hand, twenty leeches applied to the perineum are very beneficial. When the prostatic tenderness has subsided, cool hip-baths for five minutes, morning and evening, beginning at 85° F., and gradually lowering the temperature to 50° F. by adding cold water are useful. They may be continued several weeks with benefit. In continuous moderate counter-irritation, lauded by some surgeons in chronic prostatitis, I have no faith. I have used it over and over again; but I could never satisfy myself that the repeated application of small blisters to the perineum lessened the prostatitis. If it benefited the patient at all, it did so by engaging his attention and satisfying him that "something was being done" while the really curative agents I have already mentioned were slowly producing their effect. Counter-irritation by means of caustic solution of iodine is, I believe, useful when applied in the following way :—Paint the perineum, the genito-

MIDWIFERY,

AND THE DISEASES OF WOMEN AND CHILDREN.

73.—ON THE PHYSIOLOGY OF MENSTRUATION.

By Dr. John Williams, Assistant Obstetric Physician to University College Hospital.

Having traced the changes which take place in the uterus during its period, we are in a position to offer an explanation of the hitherto mysterious process named menstruation.

The source of the menstrual blood has been ascribed to the vagina, the cervix of the uterus, the Fallopian tubes, the ovary—one or all. Equally diverse have been the views held as to the manner of the flow of the blood. for it has been considered as a secretion, as a bleeding from vessels ruptured on the surface of the mucous membrane, as a bleeding from vessels opening in a valvular manner on the mucous surface, and as an oozing or perspiration from the orifices of the utricular glands.

All observers hitherto, except Pouchet, have studied the menstrual flow as a process complete in itself, and have consequently had recourse to simple congestion, or to prolonged erection, in order to explain the hemorrhage. Pouchet studied the subject from an entirely different stand-point, for he constructed a theory of menstruation (as far as the uterus itself was concerned) from the results of the examination of the discharge which appeared in the vagina at different periods of the month. From what I have stated already, it is evident that the menstrual flow is not a process complete in itself, but the terminal change only of a cycle of changes, which begins at the cessation of one menstrual flow, passes through the developmental changes of the mucous membrane of the uterus, and ends with the cessation of the flow next following. It is also evident that, important in this investigation as the examination of the menstrual discharge is, it alone cannot explain the changes which the uterus monthly undergoes, because a very great part of that discharge consists of the débris only of what once grew in an exuberant manner, and consequently can give but little indication of its source.

More recently Kundrat and Engalmann have studied the changes which take place in the uterus during the catamenia, and they have added considerably to our knowledge of the subject. They, like all previous observers, consider the time of the catamenial flow as the period of uterine activity, but they add, that the period of activity of the organ occupies a longer time than was generally supposed, and that the period of uterine rest was so much shorter—that is, they believe that the uterus is active not only during the menstrual flow, but for some time before the flow has commenced, and after it has ceased, and that there is a period of rest about the middle of the intermenstrual interval. They also suggest that fatty degeneration of the mucous membrane is the cause of the hemorrhage, for having described the swelling which takes place in the membrane before the bleeding, they add, in reference to the fatty degeneration, "that these changes begin with the bleeding, and continue after it is certain. It is a question only in what relation they stand to the menstrual hemorrhage. On that point our anatomical investigations throw no light. Our idea, however, is that those changes in the cells develop themselves independently of the bleeding, nay, that they are the cause of it."

This is a great advance in the physiology of the uterus, but we are justified in advancing still further, and in affirming that there is no period of uterine rest, but that the organ is ever undergoing those changes which either make it a fit receptacle for the ovum when impregnated, or which prepare it to carry off the ovum when impregnation has failed. If any one stage of the monthly interval could be appropriately termed a period of uterine inactivity, that one would be the bleeding period, for then the mucous membrane undergoes fatty degeneration and disintegration; while this disintegration, however, is going on, the subjacent muscular wall is in a state of active proliferation for the formation of a new mucous membrane, so that in reality there is no period of uterine inactivity.

Again, we have met with fatty degeneration of the lining membrane in the two uteri in which menstruation was imminent, but in which it had not yet begun (Nos. 7 and 8). In neither of these uteri had hemorrhage taken place, and no extravasation of blood into the soft tissue could be discovered. The fatty change began near the inner orifice and on the surface, and proceeded over the whole of the organ as far as the muscular wall; so that the degenerative change preceded the hemorrhage, and was probably the cause of it. There is, I believe, another element besides the fatty change engaged in causing the hemorrhage, and that is muscular contraction of the uterus itself. Direct proof of uterine action taking place during menstruation it is not possible to obtain, but that it does take place can hardly be doubted, because the cavity of the uterus when menstruation is over, though larger than usual, is smaller than it would be after removal of its lining membrane had not contraction taken place; and because, in some of the uteri examined by me during the menstrual flow, the muscular wall was pale, though the mucous membrane, the surface immediately under the peritoneum, and the broad ligaments were greatly congested, the blood having been driven by contraction of the muscular wall to the superficial vessels. We know further that uterine action sets in during pregnancy when the placenta has undergone fatty degeneration, and it is fair to infer that the unimpregnated uterus acts in a similar manner when its mucous membrane, which in part forms the placenta, has undergone a similar change.

The contraction of the uterus drives the blood from the muscular wall into the mucous membrane; the vessels of this membrane having undergone fatty degeneration give way, and extravasation of blood results. This extravasation takes place always near the surface, for in that situation the degenerative change has most advanced.

The rush of blood into the vessels of the mucous membrane expels the contents of the glands, together with the greater part of their lining epithelium. Even simple passive congestion, when excessive, is enough to produce this effect, as was seen in the fourth uterus of the series. This occurs before the sanguineous flow makes its appearance, and accounts in part for the increased discharge of mucus which precedes the latter for some hours.

When hemorrhage has taken place into the membrane, it undergoes rapid disintegration, and becomes entirely removed. It is removed not in pieces, but cell by cell, the process beginning immediately within the inner orifice, and proceeding along the surface towards the fundus, and at the same time towards the muscular wall. In some the removal is completed in three or four days; in others it is not finished for seven or eight. By means of this disintegration, which affects the walls of the vessels as well as the tissue around, the former are opened, and hemorrhage takes place from them. This is Aveling's "*Denidation.*"

While this destructive process is going on in the mucous membrane, active proliferation takes place in the muscular wall immediately subjacent to it. This, like the disintegration, begins immediately within the inner orifice, and proceeds towards the fundus, and at the end of the third day after the cessation of the catamenia, the lower two-thirds of the body, and at the end of a week the whole of the body of the uterus is covered by a thin mucous membrane. This membrane is produced by proliferation of the elements of the muscular wall of the organ, the muscular fibres producing the fusiform cells, the connective tissue the round cells, and the groups of round cells in the meshes formed by the muscular bundles, the glandular epithelium.

On the third day after the cessation of the flow the lower two-thirds of the body of the uterus is lined by columnar epithelium, and at the end of a week this lining is complete. It is produced probably by extension from the epithelial lining of the cervix; it is not impossible, however, that the epithelium of the tubular glands of the body of the uterus also contributes towards its formation. An abrupt distinction between the mucous membrane and the muscular wall appears first near the cervix about the tenth day after the cessation of the catamenial flow; it gradually extends towards the fundus, which it reaches a little before bleeding begins. At this time the membrane has reached the highest degree of development attainable by it in the unimpregnated uterus, and is in a fit condition to receive the impregnated ovum. This is Aveling's "*Nidation.*"

Failing impregnation, fatty degeneration, disintegration of the membrane, and hemorrhage set in, and in a few days the structure, which had been formed during the preceding three weeks, is carried off as sanguineous débris. Hemorrhage takes place from no part of the uterus except the cavity of the body.

Menstruation then is neither a congestion nor a species of erection, but a molecular disintegration of the mucous membrane of the body of the uterus, followed by hemorrhage. The increased quantity of blood found in the vessels of the uterus is determined there by the active processes going on in the organ, and is in no way allied to congestion. The flow of blood into the uterine vessels attains its maximum at the time when the proliferation is at its highest—that is, a short time before the catamenia appear. When fatty degeneration sets in the flow is suddenly reduced; when proliferation sets in actively again, the blood supply is increased, and continues gradually to be increased until the membrane has attained its full development, when the supply is again suddenly diminished, and the changes described take place, unless conception shall have occurred. In that case the membrane undergoes no fatty changes, but is further developed, and the supply of blood becomes regulated accordingly. These changes, however, form no part of those which take place monthly in the organ, and consequently do not come under consideration here.—*Obstetrical Journal, March,* 1875, *p.* 762.

74.—OVULATION AND MENSTRUATION.

By Dr. A. Dunbar Walker, London.

As German and Russian physiologists are reviving the idea (apparently claiming for themselves the origin of it) that menstruation is not necessarily connected with ovulation—the former being a periodic function of the uterus, the latter a constant function of the ovaries—it will be interesting for your readers to know, that this and similar facts now brought to light were clearly demonstrated thirty years ago by Dr. Ritchie, formerly of Glasgow, now resident in London.

In his papers published in the London Medical Gazette during 1843-45, he draws certain conclusions from over 100 dissections of the ovaries of females of all ages, and who had met their death while menstruation and pregnancy were in different stages.

Though written at a time when the profession was muc
terested about the subject, they seem to have been neglect
in general; yet they have stood the test of time, and as
creases their accuracy becomes more apparent. The follo
he brings fully out :—

1st. The Fallopian tubes ar ure, and p
continuing so throughout life. fancy an
tenacious glue-coloured mucus aring pe

cream-coloured fluid similar to vaginal mucus. They are both oviducts and vasa ejaculatoria, their distal extremities are true receptacula ovorum.

2nd. The ovaries contain from earliest infancy numerous Graafian vesicles in continual progression towards the circumference of the glands, which they penetrate previous to menstruation by circular-shaped capillary-sized pores; their development and rupture being entirely independent of menstruation. As early as the sixth year they are highly vascular; at the fourteenth they are found varying in size from a coriander seed to a small raisin. Their ova can be detected in the usual transparent granular fluid, and their coats are so elastic that their contents on their rupture may be projected to at least twelve inches, the contained ova being conducted along the Fallopian tubes to the uterus.

After menstruation has been established no change takes place in the manner of discharge of the ovisacs, only the vesicles are increased in bulk, vascularity, and organization, which causes remarkable subsequent changes. When the menses have ceased, vesicles are still developed and burst up to extreme old age, in a manner similar to what is observed in infancy and childhood.

3rd. In early infancy, extreme old age, and long-continued organic disease, the ova are minute, transparent, and structureless cells; and in advanced childhood, soon after the critical age, and during pregnancy and lactation, they are more or less organized, larger, and in the latter state are often so well maturated, that about one-third of the renewed pregnancies of married women take place while they nurse.

4th. The coats and cavities of ruptured ovisacs assume the four following forms:—

(1.) Mechanical dyeing of the coats an inky black (corpora nigra); or yellow (called by Dr. Ritchie, corpora lutea, but which are entirely different from the bodies known as such to physiologists), formed by decomposed blood. The above conditions were found indifferently at all ages and states subsequently to puberty.

(2.) In addition to the presence of blood in their cavities, organic changes took place in the coats, consisting progressively of an increased vascularity, a thickening, a whitening of the colour, and finally a corrugation of their tissues, forming white bodies either soft or hard (corpora albidi). In every variety of uterine condition subsequent to the establishment of menstruation these were found, but never before it.

(3.) A secretion of an organised, yellow-coloured, brain-like granular matter, and differed—

(*a.*) As the cerebriform matter was connected with ruptured ovisacs of No. 1 form, having transparent pellicular coats, or with those of No. 2 form, having either their outer or inner coat thickened.

(*b.*) According as the granular matter was deposited external to the inner layer only, or to the two internal layers of the ovisac. These appearances were found in immediate connexion with the existence of menstruation, and during the first seven months of pregnancy.

(4.) A conversion of the forms Nos. 1 and 2, arising out of a higher and more perfect organization; found in unimpregnated and lactating females, in the period between the eighth and thirteenth months after conception. They consisted of red-coloured fibrous bodies with an external vascular portion enclosing an opaque film (corpora rubra).

5th. No specific distinction was found in the ovaries of women who had borne children and those of females who had not been gravid.

6th. The miliary-sized vesicles obtaining in the different forms of suppressed menstruation, instead of bursting and being discharged when they reach-
d the ext of the ovary, which was the rule, were seen sometimes
avers he broad ligament, and occasionally to become soli-
n similar extrusion of corpora albida from the ovary
lso met with, and in both classes of cases a slen-
bodies with the ovaries was in a few instances
he examples of extruded vesicles here referred
ervious, and in such cases the secretion of

the ovaries of numerous transparent minute vesicles with fragile non-elastic coats, and the discharge of those, as appeared, into the abdomen, seemed to continue irrespective of the tubal obstruction.

7th. Menstruation depends on a periodical augmentation of power in the nerves and blood-vessels that supply the uterus, giving rise to the formation within the viscus of decidual vessels, which exude lymph and red globules, the latter being evacuated mixed with watery fluid, mucous matter, and some of the salts of the blood. Sanguineous discharges may come from the uterus, but are not necessarily of the normal menstrual kind, and are usually occasioned by whatever temporarily or more permanently impedes the venous circulation of the uterus.

8th. Though the catamenia are never regularly secreted without the Graafian vesicles attaining a high state of organization, yet it is not necessary that a Graafian vesicle burst at each menstrual period. The elimination of ova and the process of menstruation are correlative effects of the ovaries, and to suppose the rupture of the Graafian vesicles to be the cause of the menses is to mistake a frequent association and, to some extent, effect for a uniform cause.

9th. The principal use of menstruation is, in regard to the ovary, to provide an accessory by which maturation of its vesicles, the absorption of their peritoneal and tenacious coats, and their extension generally, may be promoted throughout the child-bearing period of life, and in reference to the uterus, to furnish a nidus within its walls, by which the ovum may be entangled, retained, and nourished.

10th. Menstruation may return for several periods without the rupture of a vesicle, but when a vesicle is ruptured, during its prevalence changes take place in the interior and coats of the ovisac, forming bodies called by Dr. Ritchie corpora menstrualia. Some of such bodies are primary, being formed exclusively under the influence of the congestive menstrual nisus ; others are secondary, being transformations of primitive species, and are formed by reflex action on the still patent vessels of recently ruptured vesicles. If pregnancy be established a reflex vascular influence is set up towards the ovaries, and the corpora menstrualia undergo fresh changes, assuming the forms described in Nos. 3 and 4 of the preceding 4th conclusion.

Any who wish to investigate this interesting subject would do well to study carefully Dr. Ritchie's papers, which are embodied in a book published by his son: (Ovarian Physiology and Pathology. Churchill and Sons.) The reader will find that the desire of the author has been to put facts before the profession, and not to draw conclusions to support any preconceived theory.—*Obstetrical Journal, October* 1874, *p.* 412.

75.—ON THE USE OF THE FORCEPS AT THE ROTUNDA LYING-IN HOSPITAL, DUBLIN.

By Dr. JOHNSTON, Master of the Hospital.

[The clinical report of the Rotunda Lying-in Hospital having been read by Dr. Johnston before the Obstetrical Society of Dublin, the president of the Society,]

Dr. LOMBE ATTHILL, remarked that Dr. Johnston's practice was so successful that they could hardly condemn recourse to it once in ten times, and nothing could exceed the beneficial results which Dr. Johnston had proved to have accrued. He would, however, be sorry, notwithstanding the favourable results detailed in the report, that the free use of the forceps should be promulgated among inexperienced people. What was quite safe in skilful hands might be very unsafe in the hands of an inexperienced practitioner. He was strongly in favour of the long double-curve forceps which Dr. Johnston was in the habit of using, although he knew many who considered the straight superior.

Dr. **Cronyn** had seen Dr. Johnston use the double-curve forceps when the os was not dilated more than the size of a halfpenny. The patient was a primipara, and on the occasion to which he referred Dr. Johnston used the instrument apparently with the greatest ease, and delivered the woman of a large child. For two or three hours previously the dilatation of the os had not advanced, though the pains were good—the labour was, in fact, proceeding very slowly. He (Dr. Cronyn) was forcibly impressed with the way in which the forceps had been used by Dr. Johnston. He was originally inclined to think that the use of the instrument was a hazardous proceeding, but after having seen it applied as he had stated he became a convert to it.

Dr. **Kidd** wished to know whether, in reference to the use of the forceps before the os was fully dilated, it had ever been found impossible to deliver the child after the instrument had been applied ?

Dr. **Johnston** replied that in no one instance was the forceps applied and the child not delivered. As a proof of the advantage of the double-curve forceps, he would mention that within the last month a woman from Denbigh, North Wales, came under his care, having in a former confinement been delivered by means of perforation. He used the double-curve forceps, and after a considerable amount of dragging he delivered her. It would be difficult to conceive a child more twisted than hers was—so much so that he feared it would not live. It, however, left the hospital quite well with its mother. That was one of the results of the use of the double-curve forceps. Once a grip was obtained with one of these, it would never yield. In another case, that of a woman with her ninth child, there was a depression on the parietal bone of the child of 3¼ in. by 1¼ in. That child also went out with its mother well on the eighth day. He believed he was nearly three-quarters of an hour delivering her.

Dr. **Kidd** thought this one of the most interesting matters that had been brought before the Society for a very long time. There was such an immense amount of matter contained in Dr. Johnston's report that he felt unable to grasp it, and therefore hesitated to speak with regard to it. In his own experience, he had sometimes tried to deliver the head with the forceps before the os was fully dilated, and he had many times succeeded in doing so. He had also succeeded in applying the forceps, and been obliged to give up the use of it, because of its slipping. The point he meant to raise was not in reference to the peculiar forceps used, whether straight or curved, because he did not think that so very material, but as to the amount of force it was necessary to use to draw a child from an undilated os uteri. If the os were dilatable, he knew they could, with a very moderate amount of force, effect delivery. But that was the very case in which probably it was not necessary to use the forceps or any artificial means of delivery. If the os was not dilated, if the membranes had ruptured very early, and they had a rigid os uteri, and applied the forceps—there, he thought, they would have to use an amount of force, which would very probably injure the patient. He knew, however, that Dr. Johnston had stated that where the os was rigid he made use of the ordinary means to counteract that rigidity. He (Dr. Kidd) confessed that, to his mind, the great difficulty to understand was the amount of rigidity that it was safe to attempt to overcome with the forceps. He had seen a great deal of force used sometimes with the forceps, more force than he thought was justifiable, and more than that to which he would like to have recourse.

Dr. **M'Clintock** said the all-important and salient feature of Dr. Johnston's able and elaborate paper was that bearing upon the use of the forceps before the full dilatation of the os uteri, and that, as it were, would open up and would constitute a remarkable epoch in the history of midwifery. It opened out a new era with regard to practice, because it was so much at variance with all the maxims, principles, treatment, and practice laid down by the great and acknowledged authorities in obstetrics. But they were not on that account to reject or repudiate it. Dr. Johnston stood in this very strong position—that he advocated a practice which he had largely tested and tried, and by which he was able to show most satisfactory and gratifying results. At the same time he (Dr. M'Clintock) must say that he was such an obstinate conservative that he thought Dr. Johnston's practice and results would go this far in his mind satisfactorily to show and demonstrate that long forceps might be applied with perfect safety to the mother and child under circumstances where formerly they would entirely have shrunk from using them. That was a great step and a great fact to establish, that under circumstances of a peculiarly pressing nature to the mother and child, to feel that they had recourse to forceps which might be resorted to with perfect safety and success to the two concerned. He fully admitted that, and agreed with Dr. Johnston, and acquiesced in his results in so far as that. Even though he did no more, that was a great step, and most important. With regard to the particular circircumstances under which the forceps should be employed, where the os was only partially dilated, there, he thought, the rule should be laid down with more precision. They knew that the first stage of labour might be prolonged to great length with perfect safety, and, in fact, impunity to the mother and child, and he felt satisfied himself that if there was any rigidity of the os uteri, there the use of the forceps would be a very hazardous proceeding. But in cases that sometimes occurred, where prolapse of the funis took place, or where any sudden emergency arose, calling for delivery to save the mother, if she was imperilled, or an attack of convulsions came on, then it was very comforting to know that they might resort to the expedient with safety and advantage. He could hardly, however, conceive a case of simply tedious labour where a resort to this expedient would be justifiable. It was one thing to say that the forceps had been used under such circumstances with safety, with great care certainly, in a few cases, and in most experienced hands, such as Dr. Johnston's; but to lay it down as a rule, or to attempt to lay down a rule that, because labour had been tedious in the first stage, resort to the forceps had followed, would be fraught with danger, and if such a practice were acted upon by inexperienced or incapable practitioners or young men, it might be productive of very serious results.

Dr. Johnston replied. With regard to what had fallen from Dr. Kidd as to the amount of force necessary to make the os yield, he could only say that, once the forceps were got in, of course it was not, as he told the students, like drawing a cork out of a wine bottle; but care and judgment in extraction must be used, until they gradually got the os expanded—and it was wonderful in how short a time the os would become fully expanded. Concerning what Dr. M'Clintock had observed as to the importance of using the forceps in the first stage, he (Dr. Johnston) must repeat to them what he had mentioned before, that it was in consequence of a case where there was early rupture of the membranes. Dr. M'Clintock had stated that the first stage might be continued with little danger. A case to which he had referred induced him to do so, and it was a case where, according to the old rule, a warm bath was used, and the patient given stimulating enema. When he again saw her he found that the os was not fully dilated, though he could extend it. He delivered her with a forceps. On the third morning, however, she was found in a state of collapse, and died in half-an-hour. At the post-mortem examination they discovered a complete separation of the cervix from the body of the uterus. That one circumstance had induced him to make the bold step he had taken, and certainly he had no reason to repent of having done so.—*Medical Press and Circular, Jan.* 20, 1875, *p.* 49.

76.—INDUCTION OF PREMATURE LABOUR.

By John C. Lucas, Esq.

The operation for inducing premature delivery or abortion in the earlier months is effected either by directly acting upon the womb and its contents, or indirectly by secondary reflex irritation through the medium of the breast, larger bowel, &c. The measure most frequently had recourse to in the present day is that originally taught and practised by Hamilton in the beginning of this century. This operation—namely, of detaching the membranes—used to be performed rather roughly in those days by the forcible introduction of the digit through the cervix uteri, but modern obstetricians have improved upon Hamilton's method by taking care to avoid puncturing the bag of membranes by the careful introduction of a flexible instrument between the uterine wall and the membranes, without tearing through the latter.

In a case which not long ago came under my observation—that of an out-patient of the West London Hospital, who was a little less than eight months advanced in the gravid condition, in which case premature delivery was urgently demanded,—after getting the consent and preparing my patient, and placing her in the usual obstetric position, I employed a long flexible gum-elastic bougie, passing it in a spiral manner across the fundus, without puncturing the bag of waters. I left it *in situ*, and labour, as desired, was brought on within nine hours; both mother and infant did remarkably well without any evil consequences to either. The operation is by no means a difficult one, is perfectly free from danger to maternal structures, and not unfrequently saves many a patient from the perils of forceps, version, &c., and many more infants from death in utero or by the painful resort to embryotomy, by which the mother has to run the risks of post-partum hemorrhage, metritis, peritonitis, &c. Therefore the timely induction of labour before the full term, in properly selected cases, would tell materially upon the statistics of parturient mortality.—*Medical Times and Gazette, Nov.* 28, 1874, *p.* 602.

77.—ON THE USE OF THE TOW PESSARY.

By Dr. Edward Copeman, Senior Physician to the Norfolk and Norwich Hospital.

At a time when we are constantly introduced to new instruments of every description, all professing to be improvements upon those before employed (but which do not always come up to the mark of usefulness claimed for them by their inventors), it may be a relief to fall back for a change upon something of a more *simple* character. I think surgeons will, as a rule, admit that the more simple the construction of their instruments the more satisfactory is the use of them, provided only they prove equally effective, although this feeling has been sometimes carried to too great an extent, unless in very practised hands. For instance, the late Mr. Martineau was in the habit of using one lithotomy staff for patients of almost every age, and one gorget for almost all; and these he carried to the hospital in his coat-pocket—a strange contrast to the variety and multiplicity of the instruments now provided for the operation, and borne in handsome mahogany cases.

But the instrument to which I specially allude in this communication is the pessary, of which there is now such an infinite variety; perhaps proving that, where so many different ones are contrived, many of them have been found of little value. My experience of them certainly leads me to the conclusion that but few of them are to be depended upon, and that some are quite useless. The case to which I am about to refer was that of a patient of more than middle age, who applied for relief at the Norfolk and Norwich Hospital, and was under the care of Mr. Crosse. She had had complete prolapsus for a long time, and no kind of pessary was found to be of any use. I chanced one day to be in the ward when Mr. Crosse examined the patient, and he asked me whether I thought an operation he contemplated would be likely to afford relief. The uterus was quite extruded, and, when he returned it into the vagina, the folds of the vagina were so loose and redundant, that he proposed removing a considerable portion on each side, in the hope that, in healing, it might afford effectual support to the uterus and prevent its further extrusion. The matter was left open for further consideration; but I suggested meanwhile that he should reduce the uterus and plug the vagina with some tow which was lying at hand, covered at the top by, and partially enclosed in, a piece of linen greased on the outside to facilitate its introduction. This was effectually done, and, although nearly half a roll of tow was used, it produced no inconvenience either to the bladder or the bowel. It maintained the uterus in its place, and was renewed as often as appeared necessary for cleanliness. Soon the patient was enabled to renew it herself; and, after a week or two, she was discharged from the hospital and advised to continue the same plan. I heard of her some time afterwards, and ascertained that the uterus never came down now, and that she could even dispense with the tow pessary, except when over the wash-tub, at which times she *thought it prudent* to apply it. She had not been so well for years.

This was a remarkable case; the worst, in extent, of prolapsus I have ever seen, and certainly not amenable to any treatment by pessaries, as far as my experience guides me ; indeed, almost every kind had been tried and failed. On reflecting upon it, I am inclined to the belief that a tow pessary might in many cases be used with success, and it has the merit of being incapable of doing injury to the parts with which it is in contact. It is easy of introduction; indeed, this patient soon learned to introduce it for herself. Being a compressible material, the tow would not keep the vaginal walls constantly on the stretch, like a solid body, but would rather allow them to contract gradually upon it, and thus prevent their losing their resilient power. The linen with which it is covered at the top and sides affords an easy means of withdrawing the tow for purposes of cleanliness, and the pressure which the tow exercises on the soft parts is equable, and so distributed that it causes no pain in any part with which it is in contact. Moreover, it is not liable to be displaced by any pressure or weight exerted upon it by the uterus itself or by muscular efforts in defæcation, for it clings, as it were, to the walls of the vagina; and this, combined with the resistance of the sphincter, effectually prevents it from being displaced. I am very sanguine in the opinion that a *tow pessary* will be found useful in various cases where pessaries are usually employed; but, at all events, I feel sure it will be found a most serviceable and effective means of removing the difficulties and annoyances of a *complete prolapsus of the uterus.—British Medical Journal, October* 24, 1874, *p.* 523.

78.—ON THE CONTAGIOUS NATURE OF PUERPERAL FEVER.

By the Editor of the Lancet.

[Puerperal fever is a term which embraces a number of diseases having different causes, symptoms, and anatomical lesions. One class of cases arises from contact with the poison of an acute specific disease, as typhus or erysipelas.]

Another class of cases is that which is due to absorption by the vagina of a poison introduced by the examining finger of the accoucheur. The poison in these cases may be the cadaveric or decomposing animal matter, such as the discharge from the generative organs of a patient suffering from puerperal fever: or it may be the contagion of an acute specific disease. There is a third class of diseases which is included under the term puerperal fever, which is generated within the body of the patient, the cause being decomposition and absorption of coagula or portions of the placenta retained in the uterus, or the breaking up and entrance into the circulation of a clot which has formed in the uterine vessels. The form of the disease depending on the introduction into the vagina or the formation within the body of a poison other than the acute specific contagion is not contagious in the sense that typhus fever and erysipelas are, but it is certain that it is not unfrequently communicated by the intervention of a third person, that person being the medical attendant. Numerous instances are on record of outbreaks of puerperal fever in which all or almost all the cases occurred in the practice of one man. Dr. Armstrong says that out of forty-three cases which occurred in Sunderland in 1813 forty happened in the practice of one surgeon and his assistant. Dr. Gordon observed, with reference to the epidemic which took place in Aberdeen in the year 1789-90, that the disease attacked such women only as were visited or delivered by a practitioner, or taken care of by a man who had previously attended patients affected with the same disorder. Roberton states that from Dec. 3rd, 1830, to Jan. 4th, 1831, a midwife attended thirty patients for a public charity; sixteen of these were attacked with puerperal fever, and they all died. In the same month 380 women were delivered by other midwives for that institution, but none of the 380 suffered in the smallest degree. Evidence of this kind might easily be multiplied, but we have said enough to show that the disease is in some cases contagious in the sense typhus is, and that in all cases it is communicable by the accoucheur or midwife. And this is not to be wondered at, for we know how difficult—nay, how impossible it is for some time to remove from the hands which have been engaged in making a post-mortem examination the odour of the cadaver, even by the most abundant ablutions and the careful use of disinfectants. We know, also, what a small quantity of septic poison is sufficient to engender a fatal disease even in a healthy person; but in the puerperal woman the poison acts at a great disadvantage, because her system is in a more or less exhausted state after the parturient efforts, and it is engaged in throwing off waste products—the wasting from severe muscular action and from the involution going on in the uterus. Besides, the poison, when communicated by the examining finger, is introduced to a part capable of absorbing rapidly, and one which, at that time, is wounded, bruised, and sore from the mechanical violence to which it has been subjected. Under these circumstances the patient is peculiarly susceptible to the slightest contagion or inoculation. Again, practitioners of midwifery find it their duty frequently, during the first few days after labour, to examine the vaginal discharge. In this manner their hands become more or less tainted; and, if the patient be suffering from puerperal fever, this taint is sufficient, even after the most careful washing and use of disinfectants, to communicate the disease to a patient examined soon after.—*Lancet, Jan.* 23, 1875, *p.* 132.

79.—ON PUERPERAL FEVER.

By Dr. Robert J. Lee, Assistant Physician at the Hospital for Sick Children, Great Ormond Street.

[The question as to the contagious nature of puerperal fever has been much elucidated by the researches of Semmelweiss.]

The method of investigation pursued by Semmelweiss was much the same as that followed by Gordon, and the proposition he supported was, like his, that puerperal fever is a disease (essentially) produced by the introduction of a septic poison into the system. Gordon, as we have seen, declined to express any opinion on what the poison might be; but Semmelweiss did not hesitate to state that it was generated in the foul organised substance which results from the decomposition of animal matter. The work does not contain any original contributions to the pathology of the disease, and in that respect, as an observer of pathological conditions, he appears to me to have been decidedly inferior to Gordon.

Semmelweiss argues his point somewhat in the following manner. "We see that the great lying-in institutions are singularly subject to occasional outbreaks of this disease, and the danger to puerperal women is very much greater in those institutions than in separate domiciles. In those hospitals where students are instructed and are in the habit of coming to the wards, and to the examination of cases from the dissecting-room, the disease is more frequent and the mortality greater than when only midwives are admitted for instruction. To prove this, we have such and such a tabulated register of cases, which shows a mortality under one system of 10 per cent., as compared with 3½ in the other. In Vienna, before 1841, the mortality in the lying-in hospital was small, when compared with that of a few years later, when the hospital had been converted from its first intention to serve for the clinical instruction of students."

"To prove that the poison was generated in the process of decomposition, and might be conveyed by the hands of attendants, a case of cancer of the uterus in a pregnant woman was the cause of a dozen fatal cases in the same ward, and the probable means of conveyance of the poison were the sponges and other things employed by the nurses, or in the course of examination by the medical attendants. We had a case, too, of necrosis of a knee-joint, which was also the cause of some fatal cases. These were clearly established facts, and they point to the same conclusion." This is the nature of the argument, which is fairly well worked out. To show that the dissecting-room might be the source of danger, he makes the declaration:—"I myself was appointed for the second time to the clinical assistantship of the first *clinique*, and was in the habit of going into the wards after making explorations in the dead-room. The mortality in April and May was 18 per cent. and 12 per cent. respectively. During the four preceding months, I was only occasional assistant, and was not engaged in *post mortem* inquiries, nor was I obliged to examine the patients *seriatim* before the visits of the Professor. Look at the difference between the mortality in the two cases."

Then he goes on to show us from his tables that there is no connection between seasons of the year and the occurrence of the fever; so that it could not be said in any way to depend on epidemic conditions of atmosphere or temperature. There is a great deal more in the way of collateral evidence adduced by Semmelweiss, but the main line of argument he pursued is thus broadly indicated. It was essentially based on statistics fairly arranged, without taking advantage of such data, and without overstraining them.

He did not neglect an important test of his views by ascertaining the effect on living animals of the artificial introduction of healthy pus into the circulation, thus proving that the symptoms could not be referred to such a cause as simple purulent infection.

I have said that Semmelweiss's work consists chiefly of a collection of observations made by himself, without direct reference to the opinions of others. He does not omit, however, to mention the views of some few whom he was led to regard as the representatives of scientific thought, both in his own country and abroad. In this part of his work, however, it must be acknowledged that he gives proofs of possessing very limited knowledge indeed of the literature of his subject, and we cannot feel surprised that he finds but little difficulty in disposing of his opponents to his own satisfaction.

He brings his arguments together into a condensed conclusion at the end of his treatise in brief and forcible language. "I have shown," he says, "above that the excess of mortality in the first lying-in *clinique* in comparison with that in the second was occasioned by putrid matter, which was introduced by the hand of the examiner. I have shown that, in October, 1847, the foul material of a foul cancer of the uterus produced puerperal fever. I have shown that, in November, 1847, a decomposing material from a carious knee-joint produced puerperal fever; how the fever was connected with the visits of the surgeons in one hospital in particular, and how the mortality during six years was reduced to less than one per cent. when all connection with the surgical wards was broken off. It was the finger of the surgeon that carried the poison in the latter case; it was the atmosphere in the case of the knee-joint, and the air and the foul linen together in the *clinique* at Pesth, where the infection spread in spite of the washing with chlorine-water."

It may be mentioned that he had adopted the use of chlorine-water with signally good results, and derived from this fact increased support to his views of the septic origin of the disease.—*British Medical Journal*, *March* 13, 1875, *p.* 338.

80.—ON THE LOCAL USE OF LIQ. FERRI PERCHLORIDI FORTIOR IN CANCEROUS ULCERATIONS OF THE UTERUS.

By Dr. CHARLES J. GIBB, Consulting Surgeon to the Newcastle Infirmary.

[In the advanced stage of cancer of the uterus the foul discharges make the case so loathsome that, in spite of the keenest feelings of pity, the surgeon is inclined to view the case as utterly hopeless, and to leave all manual treatment to the nurse.]

When we remember how much relief can be given to the worst symptoms of the most incurable cases of external cancers by operation, or other measures calculated to remove fungoid or sloughing surfaces or masses of the disease; how pain can thus be relieved, bleeding prevented, foul discharges moderated or made less disgusting in character,—it is not surprising that surgeons should strive to give similar relief to the worst cases of cancer of the womb, and be more or less successful in their efforts. From time to time I have tried the various local applications I have seen recommended, have made use of many caustics, been taught by painful experience that caustic potash or caustic potash and lime are unmanageable and too dangerous to the surrounding points to be used with the freedom requisite to be of service, that the actual cautery is too fear-inspiring, that nitric acid and acid nitrate of mercury (which have to be used with great care), are inefficient, and that lunar caustic and powders or points of alum are useless as caustics.

About two years ago I had occasion to dilate the uterus in a very obstinate case of menorrhagia proceeding from large vascular granulations in the cavity of the enlarged organ. The strongest Pharmacopœial solution of the perchloride of iron (being, in fact, iron dissolved in pure acid) was injected into the open uterine cavity, and a piece of sponge soaked in the solution left there for twenty-four hours. This treatment was perfectly successful; and I viewed with surprise the efficient way in which the soft and vascular growths were destroyed, whilst the normal structures of the uterus and vagina were but little inconvenienced, and certainly not in the least eroded. Since that time I have been accustomed to use this solution in many cases of cancer of the uterus; and I jotted down the histories of the following four cases, being cases of cancer in which I used it in my consulting rooms during one week.

Case 1.—Mrs. B., aged thirty-six; a shopkeeper; married five years; no children. Was a strong, powerful woman until fourteen months ago, when she was seized with menorrhagia, followed by the foul sanious discharges and other symptoms of cancerous ulceration. She came to my offices six weeks ago, anæmic to the last degree from almost constant hemorrhage and putrid discharge. On examination, the mouth and neck of the uterus were found destroyed, and their place occupied by a large, deep, sloughing, cancerous sore. The body of the uterus felt greatly enlarged and as hard as a cricket-ball, whilst the vagina was quite free from disease. Profuse hemorrhage attended the examination. The sore was filled with cotton-wool soaked in the solution of the perchloride, and the vagina stuffed with tow. She came from a distance by rail, and was ordered to remove with her fingers, or allow the lady who accompanied her to withdraw, the stuffing of tow next morning, and trust to the injections of zinc and alum to wash away the cotton-wool; and appropriate blood-making and aperient medicines were prescribed. On her second visit she expressed herself as much stronger, very little bleeding having taken place during the week. The application of the perchloride was repeated, and I did not see her for the next ten days, in consequence of a severe attack of pain compelling her to remain in bed. The sore was much healthier in appearance, there had been very little bleeding, and the discharge had become scanty and semi-purulent in appearance, without any of the old foul, putrid smell. She was, however, very feeble, and made the journey with great difficulty. Instead of placing the cotton-wool soaked in the perchloride over the sore, I elevated her breech, half filled the vagina with the solution for a couple of minutes, then sucked it up with a syringe, and left a plug of tow in the vagina, to be removed next day. The improvement was marked on her fourth visit; and on her sixth I found there had only been a little bleeding once during the week, whilst forcing away a very costive motion. The ulcer was perceptibly smaller and free from slough, the circumference of the vagina around it having contracted considerably. A small quantity of yellow, oil-like pus lay in the vagina, but the examination still caused the ulcer to bleed slightly. The ulcer was again bathed with the strong perchloride, and she returned home, expressing herself as twice as strong as when she first called upon me, and very much relieved from the local misery.

Case 2.—Mrs. R., aged thirty-six, an innkeeper, with several children, the last seven years old. Began to have menorrhagia and the ordinary symptoms of cancer of the womb nearly a year ago. Commenced attending my offices four months ago. Was found to have a large, soft, bleeding epithelioma, covering the swollen and apparently destroyed vaginal part of the uterus, and extending along the front wall of the vagina to within an inch and a half of the orifice of the urethra. She came in a cab, and her linen was drenched with blood. She was excessively anæmic from daily hemorrhage, and was evidently in the last stage of the disease, the sore bleeding on the least examination. A large piece of cotton wool was soaked in the perchloride, placed over the disease, and the vagina stuffed with tow. On her second visit, a week afterwards, the hemorrhage had almost ceased, the sanious putrid discharge was much lessened, and, although there was little change to be seen in the appearance of the sore, the finger felt it to be less fungoid and pultaceous in consistence, and less blood followed the examination. I may here remark that the bleeding fungoid sores were so extensive as to make it utterly impossible to use any speculum, and the oiled fingers of myself and assistant had to be used to open the vagina and make the necessary examinations and applications. The same examination was made weekly during the nine succeeding visits, by which time she had regained much of her lost strength, walking a considerable distance to my rooms, and experiencing but little pain or inconvenience except in passing urine and fæces. The hemorrhage had ceased after the third application; the foul sanious discharge had given place to a scanty oil-like purulent matter without smell ; the fungoid vaginal sore was healed, or rather converted into a thick nodulated gristly cicatricial substance, covered with a smooth membrane, whilst the deepest part—that corresponding to the uterus—alone presented a chink-like ulcerated surface. It was difficult to see or to reach the deepest part on account of the remarkable contraction that had taken place in the calibre of the vagina, which, from being very capacious and soft, admitting several fingers, had become changed to a rigid tube that would scarcely allow more than one finger to pass along the upper part of the canal. At this period some of her children became ill of fever, and she did not visit me for six weeks, having gone through much fatigue in the nursing of them. On examining her this week, on her return, I found she was again suffering from a recurrence of the hemorrhage, consequent, as she asserted, upon the menstrual flow, and I also found that the disease had again opened out the deepest part of the cicatrix, and formed an irregular foul ulcer nearly the size of a crown-piece. The front part of the cicatrix remained in much the same condition; I covered the sore with wool soaked in the perchloride, and warned her against such negligent attendance in future.

Case 3.—Mrs. B., aged forty-six, a stout, healthy-looking lady from the country, the mother of several children, called upon me about a year ago, having slight discharge and bleedings in the intervals between her monthly periods, as well as excessive monthly flow. Her other symptoms were so slight that her husband (who was also a patient) had difficulty in persuading her to see me. The mouth and neck of the uterus were found red and raw-looking, bleeding on the slightest touch, also hard and considerably enlarged, and there was an ulcerated crack at the orifice of the organ. She attended my rooms once a week for about two months. Lunar caustic was applied at first, but, producing little change, the perchloride was used, for a few times with such good effect that, considering herself quite well, she did not return to see me until now, when she tells me the bleedings have returned lately, and she feels a heavy, uncomfortable weight in the uterine region. On examination the whole organ is found greatly enlarged and very hard, being evidently infiltrated with scirrhus disease. The old ulcer is again opened, bleeds freely on examination, and there is considerable discharge. The perchloride was applied.

Case 4.—Mrs. F., aged sixty-nine, from the sea coast, consulted me about eight years ago, for a discharge, occasional menorrhagia, and the uncomfortable bearing down and other symptoms indicative of uterine mischief. The uterus was found atrophied, and the os and neck almost destroyed by a chronic cancroid ulcer, in appearance like to lupus, the whole case reminding me strongly of a similar condition of the breast, which I have often seen in old people to continue in a chronic state for years. Potassa fusa and other caustics and injections were used for more than a year, the result being the total destruction of the vaginal part of the uterus, and the formation of a deep sulcus there, which, after remaining healed for some months, again opened out, and has ever since compelled her to attend my rooms two or three times a year for a month or two together. A slight bloody discharge is the only symptom that now tells her the cicatrix has given away, and of this discharge she has the greatest dread. Lunar caustic or nitric acid, with the use of injections, were generally successful after a time in healing the sore, or rather crack, in the cicatrix. I am now accustomed, however, to fill the wound with a small piece of wool dipped in the perchloride and retaining it there, for the first day, by a plug of tow in the vagina, and find it frequently, in spite of the use of injections, to stick in the place until her next visit, a week afterwards, when I remove it. I find the perchloride to be by far the most effectual means of healing the scar when it cracks and bleeds, and on this occasion I made the usual application.

In reviewing the above cases, I have to remark that since the first case was committed to paper the patient has visited me twice, and on each occasion has reported large losses of blood, although on examination the sore looks clean and the discharge remains a thick brownish pus quite devoid of smell. What remains of the uterus is infiltrated with cancer, and although the treatment has greatly relieved the most distressing symptoms, it is evident that a fatal termination cannot be long delayed. Indeed, I have seen that where the form of cancer is hard and embraces the whole of the uterus, the destruction of the enlarged organ often takes place by a rapid disintegration, attended with alarming rushes of blood, and all that can be done only lengthens the downward path and makes it less foul and painful. It is different with that class of cases of which the second is a good example. Here there was as pure an epithelioma as is met with in the uterus, spreading over the adjoining surfaces of the vagina, and not infiltrating or running deeply into their structures, but throwing out surfacewards exuberant vascular fungoid granulations, quickly renewed as the older parts sloughed away. Into this soft albuminoid structure the acid solution of iron sinks, destroys, and disinfects, and, strong as it is, only hardens and tans, but does not in the least destroy the healthy mucous membrane of the vagina. A few applications of the cotton-wool soaked in the solution suffice to clear away the diseased growth. Reparative efforts are then made by the comparatively healthy structures underneath, and the further applications appear to hasten cicatrisation as well as eradicate the remains of the disease. In one case very similar to the second case, the lady has now been quite well for some months, and the resulting cicatrix, when she ceased to attend upon me, had so narrowed the upper third of the vagina that the finger could not pass along it, and was so thick, hard, and tuberculated that I could not resist coming to the conclusion that in the process of cure a large amount of albuminoid matter had exuded into and become solidified in the strictures surrounding the disease. Whether the thickening and solidification of the cicatrix and immediately adjoining parts is what naturally takes place in this region when epithelial cancer is destroyed by other caustics, I have no experience to know; possibly it may partially result from the action of the solution left for so long a time on the highly vascular structures supporting the diseased growth—structures that have been so long accustomed to throw into the diseased mass the large supply of albuminoid food necessary for its support. In another case of apparent cure, where the epithelial disease was confined to the uterine structure, I did not observe this condition of the cicatrix ; and it may be that the presence of so much connective tissue in the vaginal wall is the cause, as well as the seat, of this peculiar formation, reminding me, as it does, of a bad case of keloid growth in the skin, or the hard irregular cicatrix of a bad burn. The course of cancer in the womb is sometimes so rapid from the quick disorganisation and sloughing of the uterus, and the sufferings of the patient are so great, that it is impossible, in a dispensary practice like mine, to see such cases as often as necessary, and to follow them out satisfactorily, or to persuade a sensitive woman to have repeated applications of an agent which does not give immediate or permanent relief. In such cases, indeed, no remedies can be of much avail. It is where the disease is purely epithelial, or chronic or rodent in character, and confined to the surface, that the treatment I have described does most good, and, as I have said, appears sometimes to cure even bad cases. The application of the perchloride rarely causes pain. On four or five occasions a patient, on returning home, has been confined to bed for a few days, and, in one of the successful cases, for upwards of a fortnight, in consequence of a severe colic-like pain in the region of the uterus, lower abdomen, and back. I am inclined to think that the wool had been over-saturated in the perchloride in such cases, as it has occasionally happened that the solution has flowed from the vagina over the vulva after the patient has left my offices, and those parts been blistered and painfully excoriated as a consequence. On this account I am now very careful to wash away with a syringe all discharges from the surface of the cancer, to raise the breech of the patient to prevent any overflow of the solution over the vulva, and, after applying the perchloride, to suck up with a sponge from out of the bottom of the vagina any superabundant solution which a slight pressure on the saturated wool over the sore may cause to flow out; after that, to retain the wool in its place by a loose plug of tow in the vagina, and, lastly, dry and oil the vulva before the patient rises from the couch.

I have always used the strongest Pharmacopœial solution undiluted, as I have only used it to secure a caustic action. At first I applied it on pieces of sponge or lint, but finally found cotton-wool to answer best, as it sucks up any quantity that may be required, parts with it readily, and can be moulded into any form so as to fill a cavity, or cover over and adhere to any growth. It has happened occasionally that I have found the cotton-wool still adherent over the sore a week or more after its application, and, when removed, it is always a black or chocolate-coloured mass, frequently quite solid from the quantity of blood or albuminous matter absorbed into its meshes and clotted therein—indeed, one patient bravely told me she had passed a solid brown egg a few days after one of her visits. No doubt it was the hardened wool, although she declared she had cleared out the vagina the day after her visit.

I have kept no record of the cases I have treated with the perchloride; but as I have generally had six or eight under treatment at one time, I must have used it in twenty or thirty cases, and its beneficial influence has been so marked that I would strongly recommend its trial in suitable cases.—*Lancet, Dec.* 12, 1874, *p.* 830.

81.—EXTIRPATION OF A FIBRO-CYSTIC TUMOUR OF THE UTERUS, WITH THE UTERUS AND ITS APPENDAGES.

By Dr. E. H. Trenholme, Professor of Midwifery, Montreal.

The patient, first seen by me in October, 1873, is a medium-sized, well-developed, dark-complexioned healthy, unmarried woman of thirty-four years. She is spare of flesh, has a good appetite, and sleeps well. The tumour from which she seeks to be relieved was first recognised in September, 1870, after an attack of what was called "inflammation of the bladder and gravel." It grew steadily and slowly for the next year, when it rapidly increased in size, but gave her no inconvenience till February, 1872, when she had a slight attack of menorrhagia. Hemorrhage again occurred in May, also at two or three times during the year, the last of which was in July, 1873. Patient enjoys life, and has little trouble, except from the weight of the tumour, and at the menstrual periods, when there is a good deal of flatulence and pain, which passes off as soon as the flow is established.

The tumour fills the abdominal cavity, is firm to the touch, and the parietes over it are freely movable. There appears to be a fluid cyst at the upper part, between the umbilicus and ensiform cartilage, where there is much tenderness. Percussion gives a tympanitic note in either lumbar region, but over the growth the note is uniformly dull. Measurements: at the level of umbilicus, 41 in.; from ensiform cartilage to umbilicus, 9 in.; umbilicus to pubis, 11 in.; right anterior superior spinous process to umbilicus, 10½ in.; left ditto, 9½ in. The os uteri could not be felt or seen per vaginam. The vagina reached above the brim of the pelvis in the direction of the left cotyloid cavity. The right ovary could be felt on the left side of the tumour on a level with the umbilicus. The bladder when distended with urine could be traced out over the tumour in the median line, and extending about three inches above the pubis.

Diagnosis.—From the ascertained facts stated, it was concluded that it was a fibro-cystic tumour of the uterus, probably springing out of the posterior and lateral part of the body of the organ.

Prognosis.—As suppuration had not supervened, and no dangerous symptoms were manifested, it was thought that life might be enjoyed for months to come; and, although the patient was anxious and ready to undergo the operation of excision of the tumour and uterus, such a course was not deemed warrantable, and she was sent home to enjoy herself till life became a burden, or some serious symptom demanding the operation presented itself.

Progressive symptoms.—Patient went on well as usual up to the end of January, 1874, when she noticed for the first time an offensive vaginal discharge, which gradually increased in quantity up to the end of February, when she had what she calls a congestive chill, that lasted for half an hour. This was followed by a high fever, which lasted about three hours, when a profuse perspiration supervened, which lasted ten hours, and, finally, this was followed by a severe headache that lasted a week.

From this time there has been increased pain during menstruation, continuous and offensive vaginal discharge, night-sweats, and a bad odour and taste in the mouth. After the attack the patient's strength and flesh rapidly diminished, so that by the end of a fortnight she was reduced almost to a skeleton. Towards the end of April and during May she recovered sufficient strength to come to Montreal on the 28th of the latter month. She now weighed 137 lb. The abdominal measurements were as follows:—Around the body, on a level with the umbilicus, 41½ in.; ensiform cartilage to umbilicus, 10 in.; umbilicus to pubis, 12 in.; right anterior superior spinous process to umbilicus, 12 in.; left ditto, 11 in. Compared with the size of the tumour in October last, there is on an average an increase of about one inch in each of the measurements.

From the date of admission till 12th June, the day of the operation, attention was directed to the general condition of the patient. Effervescing carbonate of lithia was administered with satisfactory results in restoring the urine to its normal condition, as it had been scanty and high-coloured for some days past.

Operation.—Anæsthesia was induced by chloroform and continued by sulphuric ether. An exploring incision to the extent of about six inches was made in the linea alba, with the customary precautions. Each point of hemorrhage was at once controlled by Péan's forceps or fine hempen carbolised ligatures. An attempt was made to puncture a tumour at a point where indistinct fluctuation seemed to exist and to draw off the fluid, which failed. The incision was then extended upwards to within an inch of the pubis, care being taken to avoid injuring the bladder; the incision was then extended downwards about three inches to the one side and above the umbilicus, making the extent of incision about fourteen inches. The adhesions and vascular connections, which were very extensive on the posterior and lower part of the tumour (among which was an attachment of the bowel to the extent of about ten inches), were chiefly divided by the actual cautery and knife, every point of hemorrhage being secured by fine hempen ligatures cut off close to the knot. The uterine ligaments were divided by the hot iron, but this did not prevent persistent hemorrhage from the right ovarian artery, which was ligated with considerable difficulty. The tumour, being sufficiently freed to be raised out of the pelvis, was then carefully separated from the neck of the uterus, and the latter enclosed in the wire ecraseur, and then divided a little above the wire, at about one inch from the os, by the knife. The tumour being removed, the cavities of the abdomen and pelvis were carefully sponged out with carbolised water. The edges of the incision were brought together by eight deep interrupted sutures, and the same number of horsehair sutures superficially. The pedicle was transfixed by two steel needles crosswise of the abdomen, one passing through the centre of the pedicle, and the other, a figure of eight suture, embracing the edges of the incision and upper edge of the pedicle in its grasp. Carbolised lint was placed under the ends of the needles and over the wound. The abdomen was supported by broad strips of adhesive plaster passed over it from side to side. Over this was placed cotton wool, and all was secured *in situ* by a broad flannel roller.

At the completion of the operation, which occupied two hours and a quarter, alarming symptoms of collapse intervened, from which she rallied on the exhibition of stimulants. The patient was then moved to her bed, and a quarter of a grain of morphia given to secure rest, but its effect was to cause vomiting and so much gastric irritation that it was not repeated. Subsequently aconite was given for the purpose of checking the emesis, and encouraging the action of the skin, which it satisfactorily accomplished. At 10 p.m. the skin being moist, and pulse quick and full, veratrum viride was given to control the heart's action. It acted tolerably well, but had to be omitted as it induced severe vomiting. On the second day the bowels began to be distended with flatus. There was considerable nausea; tincture of capsicum relieved this very effectually. In the evening flatus escaped freely per anum. I need hardly say that the urine was drawn off every four or five hours, upto the evening of the third day, when she passed it without difficulty; the bowels also moved quite freely. On the fourth day she was doing well, but troubled with sore throat and tendency to cough (the result of a cold caught the day before the operation), for which nux vomica was given with satisfactory results. On the sixth day she felt so well that she said she "would like to be out of bed." On the evening of the ninth day the pedicle separated leaving a deep cicatrix, which gradually filled up. From this time up to the twentieth day, she was troubled with accumulations of pockets of pus in the parietes of the abdomen, around the cavity of the pedicle. These pockets of pus generally communicated freely with ulcers, but on those days that such was not the case there was a good deal of constitutional disturbance and fever. On the thirty-second day the patient walked across her room, and on the thirty-fifth day walked down town to Victoria-square, some 250 or 300 yards. She weighed 102 lb., being 32½ lb. less than before the operation. From this date forward she gained flesh and strength rapidly, and is now (15th October) free from pains or any other infirmity. Has gained 19½ lb. since the 1st August, and enjoys life without hindrance.

The tumour weighs 16 lb., and springs out from the centre of the back part of the body of the uterus, somewhat to the left side. A No. 10 catheter can be passed through the os, and then through a fistulous opening communicating with a large cyst near the centre of the growth, but rather nearer the upper border. This cyst, when fresh, was full of pus, and holds about 32 oz. The growth throughout is of a dense fibroid character, and inseparably connected with the body of the uterus.—*Lancet, Nov.* 14, 1874, *p.* 691.

82.—ON DIAGNOSIS OF TUMOURS OF THE BREAST.

By Thomas Bryant, Esq., Surgeon to Guy's Hospital.

Excluding acute and inflammatory diseases, tumours of the breast may be divided into three classes:—

1. Cancers; 2. Adenomas; 3. Cysts (simple or complicated). The first and second are of common occurrence; the third is an intermediate class, and are comparatively rare.

Cancer of the breast is a disease of adult life, and usually occurs at the age of forty and upwards. In looking over the notes of some 500 cases which have come under my notice, I was struck with the fact that cancer attacks unmarried women earlier in life than it does married women. The cause probably is that in the unmarried the breast ceases to be active at an earlier age than in the married. The period at which the breasts are most prone to the attack of cancer is that of functional decline.

Cancer attacks the breast in two forms—as a general infiltration and in the tuberous form. In the infiltrating variety the elements are thrown out around and between the ducts, separating the ducts from each other, and putting them as it were on the stretch. If the infiltration is at no great distance from the nipple, this tension of the ducts draws the nipple down, causing what is called retraction. The cancer-cells go on multiplying, and as the disease progresses the cancer disseminates its elements into all the tissues with which it comes in contact. In this particular it differs from all other morbid processes. In other growths the natural tissues are not invaded,—they are simply pushed on one side. If the tumour is very large, the skin may be stretched to the point of ulceration, yet it remains freely movable over the tumour, and so far healthy that if the tumour be enucleated the parts become restored to their normal condition. But it is otherwise in cancer. As the cancer elements increase they spread to the subcutaneous tissue, and finally the skin itself becomes infiltrated, and is no longer movable over the tumour. If the tumour be not removed, the skin after a time loses its vitality and ulcerates. So with the tissues beneath the gland; each in turn becomes infiltrated with the elements of cancer—cellular tissue, muscles, and bone. When this occurs there is a fixedness about the tumour; the breast can no longer be moved over the pectoral muscle. In these cases it is often doubtful whether a surgeon is justified in operating or not. But no case should be allowed to advance to this stage; the rule of surgery is to excise as soon as the diagnosis is made out. You often hear reference made to the axillary glands being affected in cancer. One of the characteristics of cancer is its tendency to spread to distant parts. How the elements spread is not in all cases clearly made out; but in the case of the lymphatic glands it is well ascertained that the cancer-cells are taken up by the lymphatic vessels, and are thus conveyed to the glands. In the same way cancer-cells may be propagated by means of the systemic circulation—a contingency which should make us always very guarded in our prognosis.

The tuberous form of cancer differs from the [infiltrating in that it is more circumscribed. It has, however, the same clinical course, and will lead to the same results—infiltration of skin, muscles, &c.

Adenoma generally occurs in the breasts of young healthy women during their period of developmental perfection. Among married women it often occurs in those who are suckling. It usually grows slowly, and as it enlarges it pushes the breast aside; it never infiltrates it. It may grow to a great size, and stretch the skin even to the point of rupture; but the skin is never infiltrated, nor the tissues beneath. The tumour is encapsuled, and usually movable, and can be readily turned out. It is never associated with any secondary glandular enlargement. Although the breast is the most common seat of adenoma, the disease may appear in other parts.—*Medical Times and Gazette, Feb.* 27, 1875, *p.* 223.

ADDENDA.

83.—SALICYLIC ACID, THE NEW DISINFECTANT.

By the EDITOR of the MEDICAL TIMES AND GAZETTE.

In the disinfectant now rapidly coming into use—viz., salicylic acid —we have a good example of a substance investigated in the interests of pure science being suddenly turned to active and important purposes. The best account of the acid and its applications which we have yet seen is contained in a pamphlet by Dr. Squibb—perhaps the most learned of American pharmacists,—being the substance of a paper read by him before the New York Academy of Medicine. In this the author deals with the past history, and indicates the great future in store for substances of a disinfectant kind, which are at the same time harmless, or nearly so, when swallowed internally.

Beginning with the first investigation of salicin, Dr. Squibb goes on to say, salicin is a glucoside, or neutral vegetable principle discovered by Leroux in 1830, in the bark of some species of willow (*Salix*), whence its name; and it was afterwards found in various species of poplar, and in other trees and plants. Salicin was early investigated by Piria, who gave an elaborate account of its derivatives, and among these of salicylic acid. This acid was soon after prepared by Löwig and Weidmann from the flowers of *Spiræa ulmaria;* and later, a research by Professor Procter, of Philadelphia, showed that our oil of wintergreen, *Gaultheria procumbens*, was really a salicylous ether; and from this source salicylic acid was obtained by Cahours. Gerhardt, Ettling, and others contributed to the researches by which the properties and reactions of salicylic acid were accurately determined, and its composition fixed; but as yet it was but a chemical curiosity, whose potential possibilities were quite unknown. By-and-by it came to be known that this acid possessed great powers as an antiferment and disinfectant. It was more sought after, and a new method of preparing it—the one still in use—was looked for, and found in the so-called carbolic acid. And it is a very curious circumstance that a substance of well and long-established character as an antiferment should have offered to these chemists a molecular constitution so well adapted to be broken up into a still more powerful antiferment; for there is no relation whatever, either in composition, or chemical or physical properties, between carbolic acid and salicylic acid, except in their effects as antiferments, and the two may, as far as present knowledge extends, accomplish these effects by similar, or by altogether different reactions. The agent which the German chemists selected to resolve the molecule of phenol into other molecules, one of which should be salicylic acid, was dry carbonic acid or carbonic anhydride, as it is called in the new chemistry. Thus, from the action of carbonic acid on carbolic acid, salicylic acid is produced. It appears that where phenol or cresol, and perhaps others of the class of phenols, are combined with an alkali metal such as sodium or potassium, thus forming phenol-sodium (often called phenate of soda) for example, and well-dried carbonic anhydride is passed through the dry powder of phenol-sodium heated to 100° to 250 C. = 212° to 482° F., the reaction occurs which produces salicylate of sodium and other compounds. The salicylate of sodium thus formed is dissolved in water and decomposed by hydrochloric aid, which, uniting with the sodium by superior affinity, sets free the salicylic acid in the form of small crystals. These crystals are washed and re-crystallized from a hot solution, and when dried form a crystalline powder of a light brown colour, somewhat resembling in colour the powder of pale cinchona bark (Kolbe). This is unbleached salicylic acid, and is probably pure enough for almost all, if not for all, the purposes to which the acid is at present applied to practical uses. The small proportion of colouring matter which it contains in this condition is held by it with great tenacity, and the further processes by which it may be obtained of various shades up to whiteness are so difficult, troublesome, and expensive that they more than double the cost of production. This bleaching may be accomplished in various ways to a certain extent, but, to get the acid quite white, Kolbe recommends that it be converted into an ether, and this ether be again decomposed. The acid imported from Germany at very high prices is occasionally quite white; but most of that sold at the more moderate prices of two or three dollars per ounce is of various degrees of whiteness, up to a very light cream colour with a reddish tinge. These varying shades of colour seem to show that bleaching processes, more or less effective, have been used with all the acid yet imported. Hence the entirely natural or entirely unbleached acid has not, so far as known, been yet used to any considerable extent, and it is a mere reasoning process, based upon the quantity and qualities of the colouring matter in the well-made unbleached acid, by which it is inferred that for most, if not for all of its present uses, this is as good as the more or less bleached product. If the well-made unbleached acid be found to subserve all the useful purposes to which the substance may be applicable; and if the substance should even in a moderate degree realise the expectations of its importance in the arts, and in medicine, as indicated by all European authorities, the process of Kolbe will make it practically attainable in the necessary quantities at a far lower cost; while without some such process it would be of very limited use to mankind, whatever might be its powers. Whether bleached or unbleached, the acid is in minute broken acicular crystals, which give it the appearance of a granular powder, soft and smooth under the pestle or knife, but somewhat rough or resinous when rubbed between the fingers. This powder is odourless and nearly tasteless. It has, however, a sweet and astringent aftertaste, with slight acridity in the fauces, but none in the mouth; and though tasteless, it leaves a disposition or inclination to expectorate which continues for some time.

It is practically insoluble in cold water, but is very soluble in hot water; and the water of a hot solution retains when cold, in proportion to its coldness, from about one part in 250, to one part in 500 of the solution. The presence of various neutral salts in small proportion in the water renders it far more soluble. Up to this time phosphate of sodium seems to have been chiefly used in Germany to render it more soluble in water for medicinal purposes, and it is said that three parts of phosphate of sodium will render one part of the acid easily soluble in fifty parts of water. It is much more soluble in alcohol and ether than in water. It melts at about 125° C. = 257° F., and sublimes at about 200° C. = 392° F. In common with other similar acids, it forms salts with the principal bases, but these seem thus far to be difficult to make, and their effects have not been investigated.

It is used for medical and surgical purposes either dry or in solution. When used dry it is sprinkled on to wounds, ulcers, or dressings in the form of very fine powder, in very small quantities, either simply powdered, or mixed in various proportions with some diluent, such as starch. When used in simple solution either for spraying surfaces, or for washes or gargles, it is used in tepid solution of about one part to 300 parts of water. Where stronger solutions are required for washes, gargles, or to moisten dressings, one part of the acid and three parts of phosphate of sodium to fifty parts of water have been used. When applied to wounds it appears immediately in the urine.

Its alleged advantages over all other antiseptics are—first, that it is far more powerful and effective in smaller quantities; and secondly, that it is, in all quantities necessary for complete effectiveness, entirely devoid of irritant action upon the living tissues. It is not caustic nor corrosive in any quantity, and never produces inflammation. In large quantities it may be irritant and painful, but yet rarely surpasses a stimulant effect, while it appears to be quite neutral in the very small quantities which are yet thoroughly effective; thirdly, it is said to reach and prevent processes of decomposition which are beyond the reach of all other antiseptics or antiferments. These processes are of two kinds—namely, vital, or those in which living organisms have an important part, such as that produced by yeast and many of those which occur in putrefaction; and chemical, or those which occur independent of vitality, as the production of the volatile oils in mustard and bitter almonds, the effect of diastase, &c. Now, while carbolic acid and other antiferments are azymotic, or completely arrest or prevent fermentations of the first kind, they are powerless with the chemical processes. Salicylic acid is said to be more effective with the vital ferments, and equally effective with the chemical.

Fourthly, in quantities said to be thoroughly effective, it is entirely odourless and tasteless, and harmless, whilst it has no poisonous effect in any reasonable quantity.

It prevents or arrests the souring of worts, washes, and beers of the brewers, and prevents or arrests the putrefactive agencies which are so troublesome and destructive to the glue manufacturers; and these and similar trades have thus far seemed to be its principal consumers. Separate portions of fresh milk set aside to become sour, one to which 0·04 per cent. of salicylic acid was added, soured thirty-six hours later than the other. Urine thus protected was on the third day still clear, and free from ammoniacal odour.

Varying proportions of the acid added to accurately measured separate portions of sweet milk, and these carefully observed afterwards until they sour—or, by the use of meat-juice instead of milk, observed closely for signs of putrefaction—would offer good indications of the quantities required to arrest these varieties of fermentation.

Professor Thiersch, of Leipzig, used it upon contused and incised wounds, and in operations, with excellent general results, destroying the fetid odour of cancerous surfaces, and pyæmic ulcerations. To such uses this writer would add the suggestion that for washing out the cavities of the abdomen and chest after those operations which tend so strongly to septicæmia, solutions of salicylic acid would seem to offer very great advantages should it prove to be as bland and unirritating as it is stated to be, and yet so effective.

In this country, salicylic acid has not been as yet much used; but it has, we understand, been introduced by Mr. Callender at St. Bartholomew's, so that we may hope before long to hear his experience of it. Those who may desire to institute investigations with it for themselves, may obtain a supply of the pure bleached acid from MM. Domeier and Sons, of Basinghall Street.—*Medical Times and Gazette, April* 24, 1875, *p.* 444.

84.—NOTES OF IODATE OF CALCIUM AS A DISINFECTANT AND ANTISEPTIC.

By S. W. **Moore**, Esq., Lecturer on Physiological Chemistry at St. George's Hospital.

The above compound is of recent introduction, and consequently but little known and used: it is important to accumulate facts concerning any new bodies, that their true nature may be accurately determined. My attention was drawn to iodate of calcium, in a paper in the Chemical News, by E. Sonstadt, in which he details how wonderfully it acted in preventing and arresting decomposition in wine, meat, eggs, and other readily putrescible substances; he also believes that it may be utilised as a drug in the arrest of septic matter (germs?) and conditions, as cholera, typhus, typhoid, and scarlet fevers. He was unable as a layman to put to the test his theories; I therefore gave this substance a trial, having first tested its powers on inert organic matter.

Reichardt (*Arch. Pharm.*) gives the following methods of preparation: If iodine is added to a solution of calcium or sodium hypochlorite, iodic acid is at once formed. So also if potassium iodide is substituted for free iodine in the above reaction, calcium iodate begins to crystallize out, and by evaporation a considerable quantity of this salt may be obtained. If precipitates containing iodine are boiled with excess of soda, the liquid filtered, calcium hypochlorite added to the filtrate, and then hydrochloric acid, a precipitate of calcium iodate at once forms. From the potassium salt thus obtained free iodic acid may be prepared by decomposing the crystals by means of sulphuric acid.

The salt used in my preliminary experiments I obtained by neutralising the iodic acid with carbonate of lime and evaporating to dryness. The salt behaves chemically as is usual with iodates; it contains six atoms of water of crystallisation, its formula being Ca 2 I 0_3, 6 H $_20$, and gives off oxygen and iodine when heated. In my latter researches, to save trouble, the salt has been obtained from Messrs. Hopkin and Williams, Cross-street, Hatton-garden.

Experiment 1.—Definite quantities of urine were taken (10 c.c.) and exposed to a limited portion of air in test-tubes, varying weights of calcium iodate were added, ranging from 0·0 1grm. to 0·2 grm., and the change noted daily; a similar quantity of the same sample of urine was left without addition to compare with the prepared ones.

On the fifth day those portions of urine treated with the iodate were nearly odourless, except for a faint urinous smell, while the sample of original urine was mouldy and slightly ammoniacal.

On the eighth day the samples with the larger quantities of iodate were of a deep brown colour, and smelt strongly of free iodine; those with the lesser proportions were unchanged; while the original urine was very mouldy and somewhat more odorous.

On the tenth day all the samples contained free iodine, but were otherwise free from unpleasant odour; while the sample of original urine was very offensive.

Experiment 2.—To 50 c.c. of fresh milk in an open dish 0·2 grm. of calcium iodate was added, and a similar quantity of the same sample of milk was also set aside untouched.

On the third day the pure milk had become solid, but no change had taken place in the sample treated with the iodate, save the separation of the cream with a slightly sour odour.

On the sixth day the original milk was covered with blue mould, and had a fœtid disgusting odour; the iodate sample was a little mouldy, but had not curdled—it was, however, slightly offensive.

On the eighth day the iodate sample was curdled and offensive.

Experiment 3.—Two samples, of 50 c.c. each, of fresh urine were exposed to the air in open vessels; one was treated with the iodate, the other left untouched. Both samples remained unaltered on the third day; on the sixth day the treated sample assumed a darker colour, but the original urine was the same in appearance and odour as when passed; on the eighth day, finding that the original urine was unchanged, except for a very little blue mould, I made enquiries respecting the patient from whom it was obtained, and found that he was taking syrupus ferri iodidi. On applying suitable tests iodine was demonstrated in the urine, which seems to account for its stability.

Experiment.—A rotten egg was divided, and a portion treated with calcium iodate, by simply sprinkling over its surface 0·2 grm. of the powdered salt.

On the third day the egg had lost the bad odour which it possessed when broken; on the sixth day it still remained inodorous, and at the edges was drying.

On the eighth day it was dry, horny, and inodorous, and has remained in that condition since.

Experiment 5.—Some fœtid decomposing albuminous fluid drawn from a hydatid cyst some months previously was treated with the salt; at the end of ten days it was nearly deodorised; it would have been a difficult matter to have recognised it as a portion of the fluid from which it was taken.

These results point to the conclusion that iodate of calcium is certainly opposed to the development of chemical decomposition in organic fluids; but how does it prevent these changes? Either by virtue of its own inherent power or by the development of free iodine by decomposition, as seen in the samples of urine. We know that the haloid elements are all more or less disinfectants; but iodine from its high price, and bromine from its corrosive properties, have not received so much attention in this direction as has chlorine.

The iodine in the natural urine of Experiment 3 seems to have greatly influenced its stability; may not the beneficial influence of iodide of potassium in syphilis be due to the antagonism of iodine and septic matter?

It now became necessary to test the influence of this body, the iodate of calcium, on the living organism; I therefore gave it in suitable cases to my patients at the London Temperance Hospital, Gower-street.

Case 1.—S. C., a case of indolent ulcer of the breast around the nipple, with a purulent discharge of bad odour. A powder consisting of half a dram of iodate of calcium to one ounce of starch powder was ordered to be dusted on the affected part.

Under this treatment the discharge became inodorous, and the wound assumed a healthy appearance; but the shooting pains in the breast were so severe that the application had to be discontinued.

Case 2.—J. R., æt. 49, a labourer, admitted with large rodent specific ulcers, occupying nearly the whole space between ankle and knee on the tibial surface of his left leg. They were recurrent, and had existed for four months on this occasion. Iodide of potassium was ordered internally, and charcoal poultices to correct the fœtor of the ulcers.

On the eighth day after admission he gave evidence of an attack of erysipelas. He was put on milk diet, with large doses of perchloride of iron. His pulse was 140; temperature, 104·2°; both pulse and temperature remained at this high standard, and the temperature once rose to 105·2°. His leg became œdematous, the integument round the ulcers assumed a sloughy appearance; his tongue was brown, dry, and cracked; the blush was spreading upwards to the trunk; and with his pulse at 120 and his temperature at 103° F. I administered, on the sixteenth day from his admission, two grains of iodate of calcium to be taken twice daily.

On the day following he declared himself almost free from pain; his appetite was improved, his pulse had sunk to 116, and his temperature to 101·8°. The administration of the drug was continued as directed; the general improvement in condition progressed; and the pulse and temperature continued steadily to decrease until the twenty-fifth day after admission, when they became normal.

Case 3.—H. H., æt. 19, admitted with chronic abscess of the back, with copious purulent discharge, and some pain. On the twenty-fifth day after admission one grain of the iodate of calcium was ordered thrice daily: a marked improvement followed; the discharge lessened in quantity, and became sanious rather than purulent.

Case 4.—C. T., æt. 46, admitted with a large indolent ulcer on back of right calf of seven years' standing. The muscles were exposed, and their action could be plainly seen on moving the foot.

A fly blister was applied to the ulcer, and subsequently charcoal poultices. It was, however, determined to try the iodate as an application with the poultices instead of charcoal; the fœtor was overcome to a considerable extent, but not so completely as with charcoal; but it gave rise, as in a previous case, to considerable pain, and had therefore to be discontinued. It was ordered internally after this in two-grain doses three times a day. A marked improvement followed the administration; the discharge lessened in quantity and lost its offensive odour, the granulation assumed a healthy appearance, and the ulcer gradually but surely healed.

Case 5.—E. L., æt. 52, labourer, admitted suffering from disease of the tarsal bones. It was intended to remove the anterior part of the foot by Chopart's operation; but on the day previous to that fixed for the operation to take place erysipelas was developed in the limb. This malady progressed so rapidly, and so affected the patient, that his life was despaired of; his pulse rose to 140 and his temperature to 104·8°; the limb was swollen to twice its natural size, was œdematous, and the skin inclined to slough at certain parts; his inguinal glands were affected, and the course of the lymphatics inflamed. He became delirious, and remained unconscious for five days.

In the midst of this condition I ordered him four grains of the iodate three times daily. He immediately improved, became conscious, said the medicine revived him, his pulse and temperature sank, the œdema subsided, appetite improved, and a general indication of returning vigour presented itself.

So marvellous was the change effected by this drug, that it has certainly never been equalled in my experience by any other medicament.

We gather, then, from these cases, though they be few, that the iodate of calcium, though an efficient local application, produces too much pain for the comfort of the patient; but that in cases in which it has been administered internally it has invariably improved the tone of the system to such a degree that the pulse and temperature have uniformly fallen to the normal standard. Some experiments were commenced to ascertain the bearing this drug had on the elimination of waste products in the urine; but from inaccuracies in collecting this fluid, owing to the unconscious state of the patient, they had to be abandoned. This matter is, however, in hand, and good results are hoped for. It must be remembered that in all these cases alcohol has been dispensed with in the treatment, and that the drug tested has been given in its pure and simple form.—*St. George's Hospital Reports, vol.* vii., 1875, *p.* 227.

85.—A NEW METHOD OF ADMINISTERING IODINE.

M. P. Collas describes, in the Bulletin Gén. de Thérap. of March 30, a new method of administering this remedy. On account of its strongly irritant action upon the organs with which it comes in contact, iodine is rarely employed in a free state. It must be dissolved in alcohol, and administered with a certain degree of caution. In truth, the tincture should be given with a strongly alcoholic wine, to prevent precipitation upon the walls of the stomach, which would irritate them and infallibly produce vomiting. Moreover, the tincture is of variable composition, for with time the iodine reacts little by little upon the elements of the alcohol, and there is then produced hydriodic acid and hydriodic ether. The attempt has been made to associate iodine with some organic matter capable, by its own re-solution, of delivering up iodine to the economy, as, for example, the iodide of starch. But this preparation is of variable composition—a grave inconvenience to the physician—and, moreover, its taste is rather disagreeable. Pills of iodised albumen present the advantage that the iodine is combined in a constant and known proportion. The iodine is completely masked, and its presence can only be recognised by destruction of the organic matter. This albumen is prepared by agitating actively an albuminous solution with iodine in very fine powder, or in solution in some appropriate vehicle. The mixture is at first highly coloured, blackish brown, but this colour gradually disappears after several hours of contact, and the preparation strikes a violet colour with starch. The product is then desiccated under gentle heat in an air bath, when it may be made into a pill mass. The dose is so arranged that each pill shall contain five milligrammes of iodine. The experiments at the Hospital Beaujon, by Prof. Dolbeau, have shown that iodine thus prepared has no bad effects whatever. The pills, in the dose of five or six per day, act rapidly in the resolution of an hypertrophy of the thyroid gland. Iodised albumen seems to have the efficacy of cod-liver oil. It has been administered in cases of chronic osteitis, ganglionic engorgement, strumous keratitis, and in two cases of Pott's Disease with congestive abscesses. It may be continued for several weeks without gastric derangement or other inconvenience.—*Practitioner, Dec.* 1874, *p.* 438.

86.—THE ANTALGIC PROPERTIES OF ESSENCE OF MINT.

In a paper read before the Société de Thérapeutique, Dr. Delioux de Savignac points out that the essence of mint exerts a special influence on the sensory nerves, which diminishes the abnormal vivacity of their reactions when those become exalted into painful affections. It is comparable in this respect to chloroform, ether, and camphor. Though its high price will prevent its being extensively used in the pure state as an anti-neuralgic and anti-rheumatic, it may be employed in alcoholic solution as an application in the form of liniment, and camphor, chloroform, and laudanum may be added to it with advantage in various cases. Amongst special cases referred to, Dr. Savignac states that it has been found extremely useful in removing the itching and pain of pruritus; in alleviating, when employed in the form of injections of the leaves, the miseries of vulvo-vaginal hyperæsthesia, vaginismus, and neuralgias of the head and face; which are best treated by taking a small ball of wool of the size of a nut, which has been made to imbibe a few drops of the essence, and rubbing the painful part with it gently: it is then covered with a larger piece of wool, and the whole is kept in position for a few minutes with the palm of the hand. The success of these external applications of the essence of mint in neuralgias of the face and head, and even in cases of congestive cephalalgia, has been both prompt and permanent. He admits, however, that the cause of the pain must be local for the cure to be permanent, since if it be dependent upon hysteria, or be connected with intermittent fever or with gastric derangement, the primary cause must be dealt with by appropriate therapeutical means. The remedy seems to have been long known in China. Intermuscular and parenchymatous neuralgias do not yield to its action very readily, but resist it, as indeed they do that of opium and belladonna; for these he has tried hypodermic injections with success, the formula used being—Hydrochlorate of morphia, 1½ grain; hydrolate of mint, 140 minims; alcoholate of mint, 15 minims. Mix.—(Gazette Médicale.)—*Practitioner, Dec.* 1874, *p.* 435.

87.—THE THERAPEUTIC VALUE OF IODIDE OF POTASSIUM.

By Dr. JAMES LAWRIE, Glasgow.

This medicine has been accredited with many modes of action: thus, in struma as an alterative, in asthma as a sedative, and in diphtheria as an antidote. To all these titles it may have a claim which different observers may think fairly borne out; but certainly the one distinct and indisputable action of iodide of potassium which I have noticed is that of *stimulating the mucous membranes;* thereby influencing their action and promoting their secretions. Thus, as the results of its use, there are pain and sense of fulness across the eyes; increased secretion from the nares, mouth, fauces, and bronchi; leucorrhœa and menorrhagia are greatly aggravated; and in persons very susceptible of its influence diarrhœa is induced, not so much of a cathartic as of a dysenteric kind; that is, rather an increase of mucus with tenesmus than of serum with catharsis.

In a person suffering from an attack of chronic winter cough, the first symptoms are great difficulty in breathing, amounting to a sense of suffocation; hard, dry, racking cough, which the patient says he cannot subdue; while he expresses a belief that relief would be obtained if something could be brought up. The suffocation complained of has been attributed to a swollen state of the air-passages, obstructing the respiration; but there is a fair probability that the dry congested condition of the membranes is unfavorable to the interchange of gases requisite for blood-aëration, and the situation of the patient such that, however he may fill his lungs, his sufferings remain unrelieved. Whatever the actual state of matters at this point, certain it is, that as soon as expectoration sets in, the breathing is improved; and, although the disease has by no means gone, the patient is so far better. Many hours of severe suffering may be obviated by taking advantage of the power of iodide of potassium to restore and promote the secretion of the bronchial membranes, thereby greatly relieving the congested blood-vessels, producing comparative tranquillity of breathing, and getting the patient over the first stage of the disease much sooner than he otherwise would. This, however, is possibly not its only value. For here again, however opinions may differ as to the cause of the emphysema, which from an early period exists in these cases, no one can have witnessed the severe and straining cough at the onset of the attack, without feeling that it is at least possible for either dilatation of the air cells or rupture of the tissue of the lung to take place—complications much less likely to occur, so far as the cough is concerned, when the sputum has been rendered easier of expectoration and the irritability of the congested membranes removed by free secretion. It is further to be remarked that the action of the iodide of potassium changes the purulent character of the sputa in chronic bronchitis to a much healthier appearance. From this view of its operation, it follows, as a matter of course, that when free secretion of mucus has set in the medicine should be used with caution or altogether abandoned; and, therefore, when in the treatment of bronchitis—capillary or chronic—moist *râles* are fairly established, the further management of the case should be on the principle of preventing a too abundant secretion, at the same time employing such means as may assist expectoration and maintain the strength.

In asthma, iodide of potassium is recognised as a valuable medicine. Here the explanation of its action generally given, is that of a sedative relieving bronchial spasm; evidence of the presence of spasm being found in the wheezing and whistling sounds heard in auscultation. Either of these sounds, however, fairly suggests the question, how far a fit of asthma is dependent on, or, at all events, greatly aggravated by, an abnormally dry condition of the mucous membranes, acting as in the diseases already mentioned, which is relieved by the iodide restoring the secretion.

In diphtheria, iodide of potassium is looked upon by many practitioners as the best remedy we possess. Here its alterative and sedative actions are laid aside, and we have it doing duty as an antidote to the diphtheritic poison; although, so far as can be seen, it exercises no new influence. In this disease, while there is free secretion from the nares, the breathing and cough-sounds are usually not very alarming, nor is respiration greatly impeded. It is not till the nares become dry—and doubtless the pharyngeal, laryngeal, and tracheal secretions diminished—that the formation of false membrane proceeds with fatal rapidity; hence, it does not seem too much to assume, so long as an iodide can keep up these secretions in such profusion as to prevent them from remaining on the parts sufficiently long to undergo membranous change, so long will its action be beneficial. The idea of an antidote might be more satisfactory; but it cannot be substantiated; nor does this view of its action afford any indication as to what extent the medicine should be given; whereas, by paying attention to the degree of influence exerted upon the mucous secretions, the dose and frequency of administration may fairly be ascertained; if not, indeed, the knowledge acquired as to whether or not it is doing any good.

Without at present entering into a consideration of the influence of iodide of potassium on digestion and assimilation—the real sources of its so-called alterative power—I may state as my conviction, that in all the various manifestations of struma, &c., where this medicine is of service it acts, so far as the iodine is concerned, in stimulating the mucous membrane of the stomach and deodenum—possibly, by sympathetic action, the liver and pancreas also—to increased secretion, whilst its alkaline base tends to promote the digestion of fat and starch.

For the dose, no absolute rule can be laid down, because in few respects, indeed, do constitutions and temperaments differ more than in the relative irritability of the mucous membranes, and, consequently, the power of iodine to influence their action. Persons of the bilious temperament usually resist its power to a wonderful degree, whilst in those of the lymphatic, sanguineous, and, above all, the nervous, a few doses of two grains each, will often suffice to cause coryza, ptyalism, pharyngeal irritation, and cough. In such diseases as diphtheria, the object should be to produce its influence as rapidly as possible, whilst in others, as struma, small doses long continued are preferable.—*British Medical Journal, Jan.* 2, 1875, *p.* 8.

88.—ON THE ANTAGONISM BETWEEN INFUSION OF TEA AND MECONATE OF MORPHIA.

By Dr. John Hughes Bennett, Chairman of the Committee of the British Medical Association to investigate the Antagonism of Medicines.

In the autumn of 1869, I received a letter from Professor Sewell of Quebec, directing my attention to the influence of tea as an antidote to poisoning by opium. He refers to a case of his published in the Lancet for July 1865 or 1866, and says: "As I consider the case as most important, showing the wonderful power of green tea, not only in poisoning by opium, but also in that by alcohol in the coma of fever, and probably in puerperal convulsions, and in other cases of absorption of urea, I give you the case from memory. Mrs. H., aged 34 (or thereabouts), wife of a medical man, had suffered for years with, as I understood, something like angina, for which she had consulted almost all the physicians in Europe, yourself, I think, among the rest. The only relief she ever got was from chloroform inhalations. On one occasion, when suffering from one of her attacks, I assisted her husband in administering three pounds of this fluid, which was continued uninterruptedly until the whole three pounds were expended. On the occasion of the last attack, which she had in this city, she felt the paroxysm coming on about 4.30 p.m., and, between this hour and 11.30 the same night, she took two drachms of Battley's sedative solution of opium every half hour, or fourteen drachms of the medicine in seven hours. Between half-past eleven and twelve, she had a convulsion-fit; I saw her a few minutes afterwards, and found her in the following condition: coma perfect; pupil contracted to a pin's point; perfectly cold up to the hips and elbows; face drawn and cadaverous; pulse imperceptible; *respiration two in three minutes*. This state of things is verified by one of my colleagues, who considered the case hopeless, and allowed me to administer what I pleased, saying she had not ten minutes to live. In the meantime, I had prepared the strongest possible infusion of green tea, and shortly after twelve I administered, *per rectum*, half-a-pint, my friend and I watching the result. In twenty-five minutes, the pulse at the wrist became perceptible; the face was less pale; and she *breathed six times in the minute*, instead of twice in three minutes. The same quantity of tea was then given, also by injection; and, to make a long story short, at 4 a.m., four hours after the commencement of the attack, she addressed me by name, saying, 'she could not see me, but that she recognised my voice;' at 8 a.m., she was out of danger. I have since had three cases of poisoning by alcohol in children, aged one year, five years, and six years. In the two latter, the coma was complete, but all were restored to consciousness in an hour or less. Will you, if you have the opportunity, give this remedy a trial in all cases of coma caused by an empoisoned state of the blood?"

It was in consequence of the above letter, that I directed so much pains to be taken in the investigation of this subject by the Committee; and, although far from complete, it will, I trust, be regarded by the profession as no unimportant contribution to the inquiry. I especially regret that ill-health, and the consequent resignation of my chair, should have prevented my prosecuting, as was my intention, this matter thoroughly in the clinical wards.—*British Medical Journal, Dec.* 19, 1874, *p.* 771.

89.—ON THE LOCAL USE OF TANNIN.

By Philip Miall, Esq., Surgeon to the Bradford Infirmary.

Mr. Llewellyn Thomas writes to the British Medical Journal of October 24th on concentrated solution of tannin as a styptic. I have used it for some years, as a topical application, in various diseases, though rather as an astringent than a styptic. To prepare it of full strength, an ounce of perfectly fresh tannin must be mixed with six drachms of water, in which it readily dissolves. This solution is a thick fluid, of the colour and consistence of treacle, which keeps much better than tannin itself. I am in the habit of describing it as Martin's solution, having learnt it from a paper by Mr. Martin in the British Medical Journal of March 20th, 1869. Mr. Martin recommended it as a method of converting living skin into leather.

Most of the tannic acid found in shops contains a large proportion of gallic acid, and will not yield a very strong solution. But, if an ounce of old tannic acid be mixed with two ounces of water, a tolerably strong solution, which answers for many purposes, may be decanted off after subsidence.

The strong solution of tannin is a most powerful astringent, almost free from irritating properties. It is one of the best dressings for wounds—far superior to collodion, and even less irritating than the styptic colloid, which it somewhat resembles. If applied by a brush and allowed to dry, it soon forms a pellicle which excludes the air, and gives ease to pain. It may be applied to almost any form of ulcer, and to wounds after amputations or other operations, especially when not very deep. It answers well, for instance, after the operation for harelip, painted over the pins and threads, in the same way as collodion is sometimes used.

In a female, aged twenty-six, the hair was caught between rollers, and the whole scalp removed to within an inch of the left eyebrow and two inches from the right, round on a level with the tips of the ears, to about the external occipital protuberance, the periosteum being extensively removed at the vertex. There was much suppuration, followed by erysipelas. After three months, exfoliation of bone occurred, and skin-grafting was performed, first with eleven grafts, and, six weeks subsequently, with twenty-one. After varied treatment, antiseptic and other, little progress was made, till, nine months after the accident, strong tannin-solution was applied. Discharge and fœtor diminished at once, and the healing process went on more quickly than before. Tenderness diminished, and the general health improved rapidly for the first time since the accident. The wound, eighteen months after the accident, was about half its original size, and the discharge trifling. The patient does household work, wears only a thin cap, and is little worse for the accident, generally or locally.

Strong tannin-solution applied to the ulcerated skin of ingrowing toe-nail at once removes pain. After one application, the offending corner of the nail may be readily raised, a little lint inserted underneath, and the nail allowed to grow up. Among many cases, I have in this way cured one in which evulsion, twice performed, had proved only a temporary remedy, the disease being reproduced each time the nail grew up. For cracked nipples, Martin's solution, diluted with an equal quantity of water, is the best application, and corresponds to the tannin-solution commonly used for this purpose.

Enlarged tonsils may be removed by daily brushing with Martin's solution. This treatment, though vastly inferior to extirpation, or even to the application of potassa cum calce, is painless, and therefore, in some cases, useful.

Bleeding warts may be readily removed by this application, as also by the perchloride of iron. I have found the former to readily reduce the granulations from an unhealed umbilicus in an infant.

Chronic phlegmonous erysipelas in the legs may be painted with it with great advantage. I have not found it so useful in acute erysipelas or erythema. As Mr. Thomas says, concentrated tannin drops are an useful remedy after the removal of polypi from the ear. I have known them to remove a small polypus without operation. They check discharge and remove fœtor in chronic catarrh of the middle ear.

I have long been prepared to use Mr. Martin's solution in any case of severe uterine hemorrhage I might meet with, as Mr. Thomas suggests, but have not yet had occasion to do so. Its powerfully astringent properties mark it as admirably suited for this purpose. For the same reasons, tannin seems a much more suitable agent than perchloride of iron for injecting into aneurisms. Some experiments I have made on animals show that the concentrated solution coagulates blood moving in a living artery, without causing any redness or cauterisation of the walls of the vessel. The clot formed was tolerably firm. I have abandoned this subject, however, being convinced that no good results would follow any form of injection in aneurism, unless the artery can be thoroughly compressed below, in which case injection is superfluous.

Tannin is well known to precipitate albumen and gelatine from solutions. It even precipitates very watery urine. Its actions on the organism are likely to prove extensive and valuable.—*British Medical Journal*, *Nov.* 7, 1874, *p.* 587.

90.—IODIC ACID AS A TEST FOR STRYCHNINE.

By Dr. Reginald Southey, Physician to St. Bartholomew's Hospital.

Two years ago, while preparing my experiments illustrating the tests for the poisons in the course of my lectures upon Forensic Medicine, it occurred to me that iodic acid would prove a far more delicate colour-test for the presence of strychnine in very minute quantities than any of the ordinary oxidising agents ordinarily recommended for employment in the standard works on forensic medicine—bichromate of potash, peroxide of manganese, ferrocyanide of potassium, black oxide of manganese, &c.; for these are all substances which, either in solution or mixture with fluid, possess colour in themselves, and although it is not one single colour, but a play and successive change of colours, that signifies the presence of this particular alkaloid, still a colourless test solution appeared to me a real desideratum.

As a class experiment I found a saturated solution of iodic acid answer admirably, not by producing any play of colours when warmed in contact with strychnine, but by evolving an invariable pink-rose tint, which lasts for some little time—an hour or more—and gradually fades out through flesh to a fawn coloured substance.

The test was pre-eminently delicate, and the resulting compound formed with the iodine made a rather bulky cake, which in the instance of very minute quantities of the inspected substance and test fluid, could be made clearly apparent to a large class on the cover-lid of a small porcelain crucible.

In order to examine the further applicability and practical use of the test, I poisoned a dog with a quarter of a grain of strychnine, injecting this in solution subcutaneously, and examined the urine, of which nearly six ounces were collected, for the presence of the alkaloid, proceeding upon Sta's method, and obtaining distinct evidence of the alkaloid in the final chloroform extract, both by the iodic acid and bichromate of potash colour-test: I was highly gratified by the more ready applicability and greater sensitiveness of the iodic test.

In May of this year an old pupil of the Hospital brought me the contents of a human stomach to examine from a case of suspected poisoning by strychnine (Battle's vermin-killer). At the time I wished that either a portion of the blood or of the urine had been given me to analyse, rather than the contents of the stomach; for strychnine appears one of those poisons which are quickly and sometimes entirely removed by absorption from the stomach, while still present in notable quantity in the blood and urine.

However, I instituted my examination, which I may perhaps be pardoned for detailing here, and again succeeded in discovering the presence of strychnine enough to swear to, although in almost infinitesimal quantity.

First, I acidulated the stomach contents with hydrochloric acid warmed over a steam-bath for half an hour, strained off and filtered the liquid.

This filtrate I now shook up with a nearly equal quantity of sulphuric ether, seeking by this to separate as much of the fats and other organic matters as I could from the mother liquor, and knowing that strychnine is not separated from its salts by ether. From the ether I separated the remaining liquid by decantation. This was next concentrated, cooled, and neutralised by potash, adding an excess of alkali, and the alkalised liquor now shaken up with chloroform.

This chloroform extract, evaporated to dryness, was a greasy compound still containing fat and organic material, but examined under the microscope, appearing to contain crystalline forms, which were branched and dentritic, and nearly corresponded with the illustrations given in Dr. Guy's valuable little manual of the forms in which this alkaloid is deposited from its chloroform solution.

A minute portion tested with bichromate of potash gave no reaction that could be relied upon, there being still too great organic impurity present, and the colour of the bichromate of potash crystal interfering with any appreciation of slight colour changes. The farther purification of the residuum from organic matter was a long and tedious process. The substance was treated with sulphuric acid, and heated at the temperature of the steam-bath for several hours together; then neutralised by potash and filtered, and the filtrate treated as before with chloroform.

After this had been done a second time, the alkaloid was obtained in sufficient purity and quantity to give a distinct rose-pink colouration with iodic acid; but the same operation of charring away all remaining organic matter by sulphuric acid had to be repeated four times in all in order to purify the strychnia enough to give a satisfactory reaction with potassic dichromate dissolved in strong sulphuric acid.

As to the nature and composition of the compound formed by strychnia and iodic acid I must refer the reader to works on chemistry.

Dr. Miller in his Organic Chemistry, part iii., page 543, says, "A portion of the hydrogen in strychnia may be displaced by chlorine or by bromine, and the body thus obtained still retains basic properties." "Strychnia, when triturated with iodine, forms a peculiar crystalline compound."

Certain it is that some definite compound is formed when the mixture of iodic acid and strychnia is gently warmed, and nascent iodine is then evolved. As the heat is increased, the substance crepitates, and little violet clouds of iodine are shot into the air, the original rose-coloured cake quickly assuming a fawn colour with a glaze upon it much like a macaroon.—*St. Bartholomew's Hospital Reports, vol.* x., 1874, *p.* 301.

91.—A NEW TEST FOR OPIUM.

By Dr. Reginald Southey, Physician to St. Bartholomew's Hospital.

Another test for opium has been discovered. A colour-test, at once so characteristic and intense, of such easy applicability and such extreme delicacy, that it needs only to be more generally known in order to be often employed.

Molybdic acid dissolved in pure sulphuric acid is the test fluid. A saturated, or at all events a strong solution should be made. The reaction is produced by the morphia in opium, not by the meconic acid: the latter undergoes no change with the reagent; the former in minutest quantities at once furnishes characteristic reaction. The best mode of proceeding is to place a drop of the suspected fluid side by side with a drop of the test fluid by means of a glass rod upon either a porcelain slab or slip of glass laid upon white paper.

At once, if morphia or any of its salts be present, a beautiful deep maroon colour will be presented when the fluids are brought in contact. This colour changes after a while, becoming first deep purple, and then gradually losing its red element, and becoming shortly dark, and later a brighter blue. This blue colouration is maintained for several hours, but gradually fades out.

In evidence of the minuteness of this test I may adduce the following facts. The reaction is distinctly obtained with a single drop of the pharmacopeial tinct. opii, as also with the compound tincture of camphor.

The presence of a good deal of impurity and of alien organic matter does not interfere much with it.

Of this I feel confident, that the busy practitioner will hail this new discovery, which enables him to detect laudanum or morphia in the dregs of bottles brought to him to test and in fluids vomited, and to swear to its presence with positive security. Further experimentation has convinced me that this test is most sensitive when freshly prepared; still two months after it was made, I was enabled by its employment to detect the $\frac{1}{40}$ of a grain of morphia as presented in the morphia lozenge of our Pharmacopeia.—*St. Bartholomew's Hospital Reports*, *vol.* x., 1874, *p.* 303.

92.—THE HYPODERMIC INJECTION OF ERGOTIN.

By Dr. W. J. Cleaver, late Senior Surgeon Liverpool Royal Infirmary.

The use of ergot of rye in this country seems to be almost exclusively employed in obstetric practice, but believing that its more extended use may be found beneficial in general practice, I propose making a few remarks regarding its applicability as a hæmostatic in various diseases, especially in the form which has been called *ergotin*.

There appears to be a little difficulty with some chemists as to what *ergotin* really is, some vaguely calling it the active principle of ergot, as, indeed, its name implies; others that it is the pharmacopœial liquid extract evaporated down to the consistence of an extract. But that form which has been most generally employed both in this country and on the Continent is the so-called *ergotin* prepared by Bonjean's process, and is simply a purified extract, the following being the mode of preparing it: "Exhaust the ergot with water, evaporate to the consistence of syrup, precipitate the albumen, gum, &c., by a large excess of alcohol, decant the clear liquid, and evaporate to the consistence of a soft extract;" it is thus an alcoholic extract, whereas the extractum ergotæ liquidum is only half so.

Badly and carelessly prepared ergotin is liable to do harm when administered hypodermically, and to induce erythema and cellulitis by the injection of very small quantites, so that great care should be employed as to the source whence the drug is obtained.

Ergot has long had the reputation of being a styptic, and if its physiological action of inducing contraction in the involuntary or non-striped muscular fibre was more generally known and acted upon, its sphere of usefulness would be very greatly extended.

Dr. Jacobi, Dr. Meadows, Brown-Séquard, and others, have written upon the physiological action of ergot, and Von Langenbeck and others on the Continent have used ergotin most successfully in cases of aneurism and hæmoptysis.

In 1870 Dr. G. W. Balfour, of Edinburgh, recommended the hypodermic injection of ergotin in hemorrhages of various kinds, and being at that time a resident surgeon in the Edinburgh Infirmary, I was able to test the treatment in cases of oozing after operations and in epistaxis, but did not keep notes of the cases ; it was also generally used over the hospital for hæmoptysis and hæmatemesis with surprisingly good results.

During the time I was house-surgeon of the Liverpool Infirmary, as may be supposed, I saw a considerable number of patients suffering from epistaxis, but have never had occasion to plug the posterior nares in a single instance, treatment with ergotin being invariably successful. I kept notes of most of these cases, and the following are selected from among them :

Case 1.—A butcher, aged 28, had suffered from attacks of epistaxis, which had occurred monthly for the five months previous to his presenting himself at the infirmary ; each attack had lasted for three or four hours, and he had been treated with gallic acid and iron ; on two occasions his posterior nares had been plugged, but with little benefit. The day he presented himself at the Infirmary the hemorrhage was copious, apparently coming from both nostrils, and he had then been bleeding for half an hour. I injected five grains of ergotin dissolved in twenty-five minims of water into his forearm ; in less than four minutes the hemorrhage had entirely ceased, and as the man was working at the slaughter-house just below the Infirmary I allowed him to leave. In three weeks he returned, being just in the same plight, and during the next four months he came up five times, when the same treatment was adopted with the same success. Six months after I called in to see him and he had had no return.

Case 2.—A girl, aged 18, who a fortnight previously had been plugged for epistaxis. The hemorrhage had returned ; and her horror of the previous operation was so great that she said she would rather suffer any pain than go through it again. Four grains of ergotin were injected, arresting the bleeding within three minutes.

Case 3 was a sailor, looking anæmic and blanched, who, on the voyage home from Calcutta, had bled seriously at the nose about every third day. He was admitted into the Infirmary ; the day after, the hemorrhage came on —not copiously, but, in his weakened condition, to a very dangerous extent. I injected five grains of ergotin, when the bleeding almost instantly stopped. The patient stated that when at sea he could never get the blood to cease flowing under two hours, with cold applied to the back of the neck and face, and washing his mouth out with cold water. The hemorrhage returned slightly four days after, and was instantly checked with the ergotin. A fortnight after, he was discharged, no return having taken place.

The remainder of the cases of epistaxis were all treated in the same manner and with the same results.

I have notes of only two cases of hæmoptysis treated with ergotin. The first was a tubercular-looking girl, aged 17, who had suffered from hæmoptysis for some days previous to my seeing her, bringing up mouthfuls of bright red blood. I injected four grains of ergotin; and although I kept her under observation for four days, only two bloody sputa followed, and those within half an hour of the injection. There were no signs of tubercular mischief in the lungs.

The second case was a woman, aged 32, who had been spitting blood for the past three months ; and on the day of her admission, according to her own account, she had vomited up a pint of bright red blood, and was when I saw her still bringing up mouthfuls. Five grains of ergotin were injected; no blood was expectorated for five days, when there was a slight return, the sputa just being streaked. For the next fortnight she rapidly gained strength, and there was no return.

There is one other case I would mention, of a woman who was admitted into the Infirmary with flooding from a fibroid tumour of the uterus. The vagina had been plugged before admission with sponges, but the hemorrhage was still very considerable. I injected five grains of ergotin, which arrested the bleeding in two or three minutes. Exactly twelve hours after, the flooding recommenced, and was stayed in the same manner; and for the next three days I had to repeat the process every twelve hours. The blood became very watery, and the patient eventually died from loss of blood and sheer exhaustion, four days after the last injection of ergotin.

There are many other cases I might cite, such as bleeding from internal hæmorrhoids and in dysentery, which were successfully treated with ergotin; but the foregoing, I think, are sufficient to show that ergotin, injected subcutaneously, possesses in a remarkable degree the properties of a hæmostatic.

In addition to its successful use in the cases of epistaxis above mentioned, the simple manner of application, which is effected by passing a needle under the skin, compared with the disagreeable operation of plugging the posterior nares, should not be lost sight of.

More recently I have found, by treatment in various cases, that three grains of ergotin have proved quite as efficient as five; and as bulk is a great consideration in subcutaneous injection, I have adhered to the smaller dose. This amount, viz., three grains, can readily be dissolved in ten minims of warm water.

The pure ergotin, when kept covered in a porcelain pot, will keep for any length of time; but when liquefied with water, it soon loses its active properties, and becomes inert.

These brief remarks are offered, trusting that more general attention may be drawn to the use of this valuable drug, and in the hope that they may lead to further experiment, from which good may result.—*Liverpool and Manchester Medical and Surgical Reports*, 1875, *p.* 13.

93.—COPAIBA AS A DIURETIC.

By Dr. E. L. Dixon.

[We are certainly in want of a good diuretic—the uncertainty and inefficiency of those at present known being often the cause of disappointment to the physician. Attention has recently been directed to copaiba by Dr. Wilks; and perhaps the record of the three following cases, in which the great benefit produced seemed to be the result of the administration of the medicine, may not be without interest.]

1.—*Ascites: Cirrhosis Jecoris* (*First Stage*).—Wm. Gardner, aged 45, hatter, admitted into Preston Infirmary under my care, 9th Jan. 1874. Has enjoyed generally good health, and has never had syphilis. Married at 21, and has had nine children, four alive, four still-born, and one dead from "fits." At 34 began to suffer from left inguinal hernia, which came on when he was at work; it gradually increased to its present large size, and has never been reduced. At 37 he took a public-house, when he drank freely of beer and whiskey. Some months ago noticed he was increasing in size, and he became unfitted for much work.

He is of an unhealthy sallow aspect, the conjunctivæ being yellowish and the skin harsh and dry. Considerable ascites: measures round the umbilicus 42 in. Large scrotal hernia of left side, only partially reducible. Liver extends to about 2 in. below the ribs, and can easily be felt to descend on forced inspiration; lower edge rounded; no bosses on the surface; it feels firm and somewhat rough. Has passed blood by the bowels, which are now constipated; no hemorrhoids. Passes only a small quantity of urine in the twenty-four hours of sp. gr. 1·026; no albumen or bile. Appetite bad.

He took blue pill at night, with compound jalap powder in the morning, and also a mixture containing acid tartrate of potash and taraxacum. No improvement was effected; the ascitic fluid was not diminished, nor the amount of urine increased; and on the 21st he was ordered to take three capsules of copaiba night and morning, with the result shown in the annexed table. The capsules were Durant's, and contained each from five to ten minims.

Jan. 17	13 oz.	Jan. 26	63 oz.
Jan. 20	8½	Jan. 27	69
Jan. 21	14½	Feb. 1	80
Jan. 22	13	Feb. 3	82
Jan. 23	14	Feb. 11	74
Jan. 24	65	Feb. 19	66
Jan. 25	74	Feb. 25	50

Thus, three days after the copaiba was prescribed the urine increased from 14½ to 65 oz. in twenty-four hours. Shortly after I was told that it had become albuminous. I therefore tested it, when I found it become opaque upon the addition of nitric acid both when cold and after boiling; but boiling alone produced no change, except that the urine gave out a very perceptible odour of copaiba, which was doubtless the cause of the turbidity produced by the acid. The sp. gr. of the urine was, on the 22nd, 1·025; on the 24th, 1·014; on the 25th, 1·010; on the 26th, 1·012. The girth at the umbilicus was on 1st Feb. 37¼ in.; on 11th, 35 in.; and on 25th, 34 in. Feb. 26: There is no ascitic fluid to be detected, the vertical dulness of the liver is 6 in.; there is no alteration on palpation. There is still slight sallowness; the appetite is good, the bowels are regular, and his general condition is much improved. Discharged. He attended for some time as an out-patient, and kept better and free from dropsy. He was recommended to become a teetotaller.

2.—*Morbus Cordis: Emphysema and Œdema Pulmonum: Anasarca.*—William Buskell, aged 73, a fish hawker, admitted into Preston Infirmary, under my care, 23rd Oct. 1873. Has never had acute rheumatism. Has a mitral systolic bruit at the apex of the heart: hyper-resonance on percussion generally over the chest, with universal prolonged expiratory murmur, and minute crepitation at the bases of the lungs. There is a trace of albumen in the urine, which is very scanty, and of sp. gr. 1·020; on the 8th November it was measured as only 7 oz. Considerable anasarca. The treatment consisted in the use of hydrogogue purgatives, such as the pulv. jalapæ comp.; turpentine epithems to the chest; a blister between the scapulæ (Nov. 4th), when the orthopnœa became very distressing. Diuretics of various kinds were successively given, carbonate potash, spirits of nitre, squill, &c.; the pill with digitalis, squill, and blue pill; infusum lupuli; gin; acid tartrate of potash, &c.; but without any increase in the amount of urine. Nov. 26: The urine continues so scanty that it cannot easily be collected; the anasarca is rapidly increasing and is now very great, the minute crepitation at the bases of the lungs extends, there is persistent orthopnœa, and the patient is evidently in a very critical condition. Three capsules of copaiba are ordered to be taken night and morning. In a few days the amount of urine began to increase, and on the 3rd December it was again begun to be collected as detailed in the table; the amount is exclusive of that passed at stool, and the bowels were always acted upon daily:—

Dec. 3	46 oz.	Dec. 15	105 oz.
Dec. 4	36	Dec. 16	98
Dec. 5	25	Dec. 17	83
Dec. 6	35	Dec. 18	103
Dec. 7	15	Dec. 19	100
Dec. 8	43	Dec. 20	84
Dec. 9	109	Dec. 21	48
Dec. 10	52	Dec. 23	50
Dec. 11	106	Dec. 27	50
Dec. 12	99	Dec. 30	45
Dec. 13	108	Jan. 6	40
Dec. 14	98		

On 15th Dec. it was noted that the œdema had absolutely disappeared. 23rd: Two capsules only twice a day were ordered. Jan. 22, 1874: Capsules omitted entirely, and a mixture of tartrate iron and infusion of broom ordered. Feb. 21: Has remained free from dropsy and from œdema of the lungs, and is now discharged.

3.—*Morbus Cordis: Albuminuria: Ascites: Anasarca.*—Ellen Glegg, aged 36, married and has a child eight months old, admitted into Preston Infirmary under my care, 12th May, 1874. There is a loud systolic bruit at the apex of the heart, the impulse of which is notably increased; pulse very small and irregular. The liver extends two inches below the margin of the ribs, and there is some ascitic fluid within the abdomen. Urine sp. gr. 1·018; albumen ½. No casts were detected under microscope. Considerable œdema of the legs which has existed five weeks. She has been ill, she says, since Christmas, when she hurt her back; no hemorrahge was, however, produced; has never had acute rheumatism. She was ordered tartrate of iron with squill, digitalis, &c.; imperial drink, with compound jalap powder occasionally. The urine continued very scanty, and no improvement seemed to take place at all, when, on the 22nd, she was ordered to take two copaiba capsules every night. The very next day, the urine of that day being measured the following morning the amount was nearly trebled, as will be seen by the accompanying table:—

May 17 . . .	8 oz.	May 29 . . .	88 oz.
May 18 . . .	16	May 30 . . .	78
May 19 . . .	20	June 1 . . .	90
May 20 . . .	8	June 2 . . .	93
May 21 . . .	16	June 3 . . .	88
May 22 . . .	20	June 4 . . .	58
May 23 . . .	54	June 5 . . .	42
May 24 . . .	33	June 6 . . .	47
May 25 . . .	50	June 7 . . .	40
May 26 . . .	76	June 8 . . .	47
May 27 . . .	72	June 9 . . .	35
May 28 . . .	90		

Not only did the quantity of urine thus increase, but the albumen absolutely diminished, for on the 9th June merely a trace of it was discoverable; although it might have been feared that such an irritating diuretic would have acted most perniciously upon the kidneys in this case. On 1st June the sp. gr. was 1·010. On 3rd June it was noted that the weather was very hot. The dropsy rapidly disappeared, and she was discharged from the infirmary at her own request on 16th June, quite free from either ascites or œdema.—*Practitioner, Feb.* 1875, *p.* 81.

94.—ON APOMORPHIA.

By Dr. Walter G. Smith, Examiner in Materia Medica, Queen's University, Ireland.

1. Apomorphia, or rather hydrochlorate of apomorphia, when pure, and employed in suitable doses, is a rapid, simple, and harmless emetic.
2. It is *rapid*, for its action always takes place, at latest, within ten minutes after administration.
3. It is a *simple* emetic, for it does not appear to exert any influence upon the other functions.
4. It is *innocent*, and does not seem to possess dangerous toxic properties.
5. Lastly, the facility with which it can be administered by hypodermic injection fulfils a therapeutic desideratum, and suggests its adoption by physicians in some special circumstances, such as the medication of children and of the insane.

At present the whole supply of apomorphia is derived from two houses—viz., Macfarlan & Co., Edinburgh; and Merck, of Darmstadt. The preparation supplied by the former is said to be the most active and reliable, but, as yet, there is no convenient test for determining the purity of the product.

As an average dose for an adult man of the (Scotch) hydrochlorate of apomorphia, M. Bourgeois fixes on 1 cgrm. (nearly ⅙th gr.) hypodermically, and 3 cgrms. (*i.e.*, ½ gr.) by the mouth. The best form of solution is that obtained by dissolving 1 part of the salt in 100 parts of distilled water. If the proportion of the salt be greater, the solution becomes muddy, and it is necessary to add one or two drops of HCl in order to clear it—a serious objection in the case of a liquid intended for subcutaneous injection.

From his experiments on dogs, the author concludes that the toxic action of apomorphia is extremely feeble; the minimum dose capable of inducing vomiting is about 3 mgrms., and the effect does not appear to be weakened by repetition of the same dose on several successive days.

An observation of Siebert bears upon this point. This experimenter had a bitch, weighing 6 kilogs., which invariably vomited within three minutes after a dose of 1 mgrm. of hydrochlorate of apomorphia. For fifteen days the same injection was practised, and was always followed by the same result. On the fifteenth day 1 decigr. was injected; the animal vomited for three-quarters of an hour, and was restored at the end of another hour. After the lapse of a week, the experiment was repeated for fifteen days consecutively, and always with the same result.

It is a noteworthy point that no local irritation follows on the hypodermic injection of apomorphia, either in man or the lower animals. The physiological action of apomorphia upon the pulse agrees with that observed under the production of nausea and vomiting by other means—viz., acceleration before emesis takes place, and subsequently a slight depression, with speedy return to the normal. The respiration becomes quickened and irregular previously to vomiting, and the temperature is not sensibly affected in man. There is complete freedom from gastro-intestinal irritation of any kind, and neither colic, tenesmus, nor abundant stools were observed. In many cases, the act of vomiting is succeeded by an irrepressible desire to sleep. A full dose of apomorphia will induce vomiting at the end of *one minute*, whereas the emetic action of a moderate dose of emetin (active principle of ipecacuanha) is not manifested for twenty or thirty minutes.—*Dublin Journal of Medical Science, March*, 1875, *p.* 228.

95.—ON ALCOHOL.

By Dr. B. W. Richardson, F.R.S.

Disposal of Alcohol in the Organism.—We are brought now to one of the most important parts of our study. We see that, under favouring conditions, alcohol will oxidise in the presence of the air. We see that it will oxidise in two ways; actively, with the production of much heat, and with the formation of carbonic acid and water; passively, with the production of aldehyde and acetic acid.

In the human body, do any similar changes take place? Throughout the whole of this vast sheet of the minute circulation there is ever in progress, during life, a process of slow oxidation of carbon and hydrogen, by which heat is produced, and carbonic acid and water are produced. The heat is proved by the animal warmth which is ever present in our bodies while we live; the carbonic acid and water, as products, are proved by their continued presence in the secretions from the lungs, skin, and other organs.

Alcohol, we have seen, is carried by the blood into this minute circulation. Is it possible that it can pass through that ordeal and undergo no chemical change? If it do undergo any changes, what is their nature? These questions have occupied the attention of many gifted minds; but they are not yet solved. Let me endeavour to put the position in which they stand plainly before you.

The earlier physiologists of this century came naturally enough to the conclusion that the alcohol taken into the body is consumed there with the evolution of heat. A certain development of heat in the superficies of the body, and a certain sensation of glow which follows upon the imbibition of spirit, lent countenance to this suspicion. But in course of time, independently of any knowledge of the effect produced by alcohol in the minute circulation of the blood, it began to be doubted whether alcohol was disposed of in the organism by its combustion. Some observers had noticed, in conducting the examination of the body after death from excess of alcohol, that the odour of the substance was present in the tissues, especially in the nervous tissue, and it was doubted whether the alcohol might not under some circumstances remain in the organism without undergoing any change at all. In 1860 three eminent Frenchmen, Lallemand and Perrin, assisted by Duroy, published a prize essay on alcohol, in which this view was maintained, or, as the authors would probably say, was originated; for in truth they were the first to state the view on direct scientific evidence. From the result of many experiments, they came to the conclusion that alcohol taken into the living body accumulates in the tissues, especially in the liver and in the brain, and that it is eliminated by the fluid secretions, notably by the renal secretion, as alcohol. They sought in the different tissues for evidence of the secondary products of the oxidation of alcohol, for aldehyde, acetal, and acetic acid ; and they found none of those products, except some acetic acid in the stomach, which acid, they concluded, was formed from the alcohol received directly into the stomach and from the action exerted upon it there by the gastric juice. The experiments carried on by these inquirers were so numerous and careful, and the results they arrived at were so definitely stated that their labours were for a season accepted as conclusive by many men of science, and by the majority of the public. It was ascertained by other experimentalists that alcohol is eliminated by the system in the direct way, as alcohol, and the question of elimination rested as if it had been solved.

The interval of credence in these assertions was not very prolonged. An English physician soon commenced to cross a lance with his learned French peers, and to point out certain distinct errors in their results. I have no doubt many of you know, before I mention his name, that he to whom I refer was the physician who last year lost his life from the performance of his professional duties—the late Dr. Anstie. Respecting this observer, whose friendship I owned for many years, it is meet for me to pay this public tribute of respect ; that no man I ever knew combined with vigour of mind, such incomparable industry and courage, or a more honourable regard for scientific truth and honesty. The subject we are considering has lost no investigator more ably learned for the work that still remains to be done.

From Dr. Anstie came the earliest expressions of doubt relative to this hypothesis of what is called the direct elimination of alcohol by the secretions, and from him have come the latest objections. His arguments have been sustained abroad by Schulinus, and in this country by Drs. Thudichum and Dupré, whose work on wine will, even in another century, be more highly prized, if that be possible, than it is now. The sum and substance of the labours of these observers is stated in a few words. They prove that while it is true that, under certain circumstances, alcohol taken into the body will pass off in the secretions unchanged, the quantity so eliminated is the merest fraction of what has been injected, and that there must be some other means by which the spirit is disposed of in the organism. In a lecture I delivered on this subject in the year 1869, I ventured to suggest, in commenting upon a series of Dr. Thudichum's remarkable researches, that perhaps one element of research was wanting to prove conclusively the fallacy of the direct elimination hypothesis. I thought that sufficient time had not been allowed between the administration of the spirit and the final determination made for it in the excreted fluids. It was not, I argued, shown how much spirit the tissues would hold unchanged. The objection was sound, and has been renewed by more recent experiment.

In the last research, conducted by Anstie, in which he was assisted by Dupré, the results of the experiments were unmistakable in their bearing on the points now under our consideration. The history of these labours is recorded in full in the last paper written by Dr. Anstie, and published in the journal called the Practitioner, for July, 1874.

The test that had been commonly employed for determining the presence of alcohol in the fluid suspected of containing it, was the colour-test. A solution is made of this salt, the bichromate of potassa, with sulphuric acid. When to this solution alcohol is added, there is a change of colour from brownish red to green; owing to the reduction of the chromic acid to the green oxide of the base chromium. By marking the difference of colour produced, a scale can be adopted which will show the extent of the reduction, and thereby the amount of the spirit that has caused the change. This process was improved by Dr. Dupré. He distilled the fluid in which alcohol was believed to be present, and then, after treating the distillate with the bichromate and sulphuric acid solution, he tested with a standard solution of soda for the amount of acetic acid which would be produced by the oxidation of alcohol were that fluid present.

This modification of test was and is a very considerable advance, since it enabled the observers to conduct their determinations with greater accuracy of detail. In the research they conducted with it two facts of singular interest were elicited. The first fact was discovered by Dr. Dupré. It was, that from the secretions of persons who do not drink alcohol at all a fluid can be distilled which affects the chromic test as if alcohol were actually present in the secreted fluids, and that this hitherto unsuspected product is oxidised into an acid so like acetic acid it cannot be distinguished from it, and is apparently identical with it. To be plain, Dupré's discovery suggests that no man can be, in strict scientific sense, a non-alcoholic, inasmuch as "will he nill he"—he brews in his own economy a "wee drap." It is an innocent brew certainly, but it is brewed, and the most ardent abstainer must excuse it. "Argal, he that is not guilty of his own death shorteneth not his own life." The fault, if it be one, rests with nature, who, according to our poor estimates, is no more faultless than the rest of her sex.

The second fact, which came chiefly from the labours of Dr. Anstie, was that from animals under alcohol, not one of the secretions, not all the secretions combined, yielded any more than a fractional amount of the alcohol that had been administered. The experiments were by necessity made on the inferior animals, but they supplied none the less conclusively the fact stated. It was proved that an animal, a terrier dog, weighing ten pounds could take with comparative impunity nearly 2,000 grains of absolute alcohol in ten days, and that on the last day of this regimen, he eliminated by all the channels of elimination only 1·13 grains of alcohol. This fact was of itself sufficiently remarkable, but another still more important remains to be told. In completion of his research, after an animal had been treated with alcohol, as above described, Anstie killed it instantly and painlessly, two hours after it had received the last quantity—ninety-five grains—of spirit. Then the whole body, including every fragment of tissue with all the fluid and solid contents, was subjected to analysis, with the result of discovering only 23.66 grains of spirit.

We are driven by the evidence now before us to the certain conclusion that in the animal body alcohol is decomposed; that is to say, a certain portion of it (and if a certain portion why not the whole?) is transmutable into new compounds. The inference that might be drawn is fair enough, that the alcohol is lost by being burned in the body. It is lost in the body, and out of the body it will burn. If it will burn in the organism it will supply force, for it enters as the bearer of so much potential energy. In combining with oxygen, is there then a development of force or heat to the extent that would be developed in the combustion of the same quantity in the lamp, or from the distribution of it over the platinum black? At the same time, and in corroboration, is that product of its combustion, carbonic acid, to be discovered in the excretions? If there be heat, and if there be product of carbon consumed in oxygen, then alcohol must rank as a heat-forming food.

Alcoholic Phthisis, or the Consumption of Drunkards.—There are fatal mischiefs induced in the lungs by the persistent resort to alcohol; and to one of these I would direct special attention. It is that deterioration of lung-tissue to which, in the year 1864, I gave originally the name of *alcoholic phthisis* or *the consumption of drunkards*. The facts came before me at first in this manner. In a public hospital to which I acted as physician, I had brought before me, in the course of many years, two thousand persons who were suffering from consumption. I gathered the history of the lives of these, and of the reasons why they had passed into the all but hopeless malady from which they suffered. In my analysis of these histories I found that the causes of the malady altogether were, in the great majority of instances, predisposition from hereditary taint, exposure to impure air, want, or certain other allied causes. But the analysis being conducted rigidly, I discovered that when every individual instance had been classified as due to the causes stated above, there remained thirty-six persons, or nearly two per cent. who were excluded from them, who appeared to suffer purely from the effects of alcohol, and in whom the consumption had been brought into existence by the use of alcohol.

The added observations of eleven years since the above-named fact was recorded in the Social Science Review, as a new fact in the history of the disease, only served to prove in the minds of other men as well as my own the truth of the record.

The persons who succumb to this deterioration of structure induced by alcohol, are not the exceedingly young, neither are they the old. They are usually over twenty-eight and under fifty-five. The average age may be taken as forty-eight. They are persons of whom it is never expected that their death will be from consumption; they are generally males. They are probably considered very healthy: men who can endure anything—sit up late at night, run the extreme of amusements, and yet get through a large amount of business. They sleep well, eat pretty well, and drink very well. They are often men of excellent build of body, and of active minds and habits. They are not a class of drinkers of strong drinks, who sleep long, take little exercise, and grow heavy, waxy, pale—

> "Sleek headed men, and such as sleep o' nights."

On the contrary, they take moderate rest, and see as much as they can. Neither in the ordinary sense are they drunkards; they may never have been intoxicated in the whole course of their lives, but they partake freely of any and every alcoholic drink that comes in their way, and they bear alcohol with a tolerance that is remarkable to observers. They are hard drinkers as distinguished from sots. Beer is to them as water. Wine is weak; the only thing that upsets them is stiff grog in relays, or a mixture of spirituous drinks carried to the extent of what they call, in grim joke—in which death surely joins—"piling the agony."

As a rule these cannot live in what they consider to be comfort without a daily excess of alcohol, which excess must needs be renewed on emergencies, if there be greater amount of work to be done, less sleep to be secured, or more life to be lived.

As specimens of animal build these persons are often models of organic symmetry and power. In fact, they resist the enemy they court for so long a time because of the perfection of their organisation. More than half of those whom I have seen stricken down with alcoholic phthisis have expressed that they had never had a day's illness in their lives before; but questioned closely it was found that none of them had actually been quite well. Some of them had suffered from gout, others from rheumatism or neuralgia. They had felt severely any depression, such as that which arises from a cold; and if they had been subjected suddenly to causes of excitement or exhaustion, they detected, without actually realising its full meaning, that their balance of power against weakness was reduced, that the end of the beam called strength was rising, and that an extra quantity of alcohol was required to bring back equilibrium. As a rule men of this class are thoughtless of their own health and their own prospects, for they have an abundant original store of energy. They are designated as "happy-go-lucky" men, or as men who "always fall on their feet," which truly they do, but not without injury.

The countenance of the alcoholic consumptive differs from that which is usually considered the countenance of the consumptive person, and equally from that which all the world adjudges as belonging to the man who indulges freely in strong drink. Who does not remember the wan, pale, sunken cheek of the youth on whom ordinary consumption has set its mark ? And who, again, does not recall the *facies alcoholica*—the blotched skin, the purple, red nose, the dull protruding eye, the vacant stare of the confirmed sot ? The alcoholic consumptive has none of these characteristics. His face is the best part of him in all his history. When his muscles have lost their power and his clothes hang loosely on his shrunken limbs, he is still of fair proportion in the face; he has little pallor and he is expressive in feature, so that his friends are apt to be deceived and to believe that there must be hope for his recovery, even when he is beyond every hope. I remember being actually taken aback on one occasion on finding, in a man who seemed, from his face, to be in perfect health, how completely destroyed his lungs were by the encroachments of disease ; and I cannot be surprised, therefore, that others, less informed, should share in such an imperception of danger when it is close at hand. Nobody, in a word, " pities the looks" of these sufferers, and good eyes are necessary to learn that pity is called for.

The phenomena are not always developed at a time when the sufferer from them is indulging most freely in alcohol. On the contrary, it is by no means uncommon that the habit of excessive indulgence has been stopped for some time previously to their development. The reasons assigned by the patients for abstinence vary. One man may have been strongly advised by his friends to desist, or may himself have undergone a certain measure of reform ; another has been led by the reading or hearing of arguments on temperance ; a third, by want of means to obtain the indulgence; but by far the larger number tell you that a time came when the desire for so much drink did not occur to them. They will state that they tried the round of the various spirits, but found that none agreed with them as before, so that at last they were driven to rely on beer as the only drink they cared for. We read all this off clearly enough from a physiological point of view. We see that, in fact, the body has been resisting the alcohol; that it could not do away with it as it did when all the excreting organs were in their full prime; and that those drinks only can be borne in which the amount of alcohol is least, but the sufferer does not comprehend the fact, and therefore he not unfrequently concludes that his increasing languor and debility are due to the necessary withdrawal of the stimulus on which he seems to have been actually feeding during the greater part of his life.

The signs which first indicate failure of health are usually those of acute pleurisy. There is pain in the side, quick, sharp, startling. The term " stitch" in the side is commonly applied to this pain, and is expressive enough. After a time the pain becomes continuous, and when it subsides, suppressed breathing, or difficulty of filling the chest, is at once felt and recognised. This difficulty is due to the circumstance that a portion of lung has become adherent to the inner surface of the chest. The next sign indicating that the disease (consumption) is present, is, usually, vomiting of blood. In two-thirds of the examples to which my attention has been directed this has been the sign that has first caused serious alarm. It is commonly on this event that the physician is called in, who examines the chest with a stethoscope, and finds too often a condition that is hopeless. From the appearance of that sign all is down, down, down towards the grave.

There is no form of consumption so fatal as that from alcohol. Medicines affect the disease but little, the most judicious diet fails, and change of air accomplishes but slight real good. The sick man with this consumption may linger longer on the highway to dissolution than does his younger companion, but there is this difference between them, that the younger companion does often leave the highway to find a by-path to health, while the other never leaves it, but struggles on straight to the end. In plain terms, there is no remedy whatever for alcoholic phthisis. It may be delayed in its course, but it is never cured, and not unfrequently instead of being delayed it runs on to a fatal termination more rapidly than is common to any other type of the disorder.

The origin of this series of changes from alcohol is, as you will perceive, in the membranes. The course of it is through the membranous tissues. The vessels give way after a severe congestive condition, and blood is exuded, or extravasated into the lung. There are here two diagrams in water tint, in which both these conditions are faithfully depicted, and to these is added a third, which shows in some, but in an imperfect manner, the course of the after destruction of the substances of the pulmonary organs.

Alcoholic Disease of the Heart.—The heart, not less than the rest of the vital parts, is subjected to deterioration of structure from alcohol. We need not wonder at this when we recall the strain to which it is subjected by the agent, the excess of work it is made to perform. I touched on the mechanical evils that befell the heart from these circumstances in my last lecture, and the structural evils which I have now to specify are not less grave. The membranous structures which envelope and line the organ are changed in quality, are thickened, rendered cartilaginous, and even calcareous and bony. Then the valves, which are made up of folds of membrane, lose their suppleness, and what is called valvular disease is permanently established. The coats of the great blood-vessel leading from the heart, the aorta, share not unfrequently in the same changes of structure, so that the vessel loses its elasticity and its power to feed the heart by the recoil from its detention, after the heart, by its stroke, has filled it with blood.

Again, the muscular contraction of the heart fails, owing to degenerative changes in its tissue. The elements of the muscular fibre are replaced by fatty cells ; or if not so replaced are themselves transferred into a modified muscular texture in which the power of contraction is greatly reduced.

Those who suffer from these organic deteriorations of the central or governing organ of the circulation of the blood learn the fact so insidiously, it hardly breaks upon them until the mischief is far advanced. They are for years conscious of a central failure of power from slight causes, such as over-exertion, harass, broken rest, or too long abstinence from food. They feel what they call "a sinking," but they know that wine or some other stimulant will at once relieve the sensation. Thus they seek to relieve it until at last they discover that the remedy fails. The jaded, over-worked, faithful heart will bear no more; it has run its course, and the governor of the blood stream broken, the current either overflows into tissues, gradually damming up the courses, or under some slight shock or excess of motion ceases at the centre.

Other organic changes.—In the eyeball certain colloidal changes take place from the influence of alcohol, the extent of which have as yet been hardly thought of, certainly not in any degree studied, as in future they will be. We have learned of late years that the crystalline lens, the great refracting medium of the eyeball, may, like other colloids, be rendered dense and opaque by processes which disturb the relationship of the colloidal substance and its water. By this means even the lens of the living eye can be rendered opaque, and the disease called cataract can be artificially produced. Sugar and many salts in excess, in the blood, will lead to this perversion of structure, and after a long time alcohol acting in the manner of salt is capable, in excess, of causing the same modification. In the eyeball, moreover, alcohol injures the delicate nervous expanse upon which the image of all objects we have looked at is first impressed. It interferes with the vascular supply of this surface, and it leads to changes of structure which are indirectly destructive to the perfect sense of light.

In yet another mode alcohol perverts the animal mechanism. By some as yet obscurely definable interference with the natural transmutation of the colloidal substances into saline or crystalloidal, it gives rise to the production of an excess of some salines which appear in the fluid renal secretion. These saline matters accumulated in the blood from inability of the excreting organs to dispose of them, are directly injurious, and exist as possible causes for the promotion of cataractous changes in the crystalline lens, and varied changes in other of the colloidal tissues and membranes. They are also a cause of a disease local in character and produced by the very aggregation of saline product, particle by particle, into a compact mass like a stone. I refer to what is called calculus. In writing the history of one of the districts of England in which calculous disease is very prevalent, I expressed many years ago the view that alcoholic indulgence was one of the most telling agencies in the production of the malady. I have seen nothing since that would lead me to alter that statement.

Organic Nervous Lesions from Alcohol.—Lastly, the brain and spinal cord, and all the nervous matter become, under the influence of alcohol, subject, like other parts, to organic deterioration. The membranes enveloping the nervous substance undergo thickening ; the blood-vessels are subjected to change of structure, by which their resistance and resiliency is impaired; and the true nervous matter is sometimes modified, by softening or shrinking of its texture, by degeneration of its cellular structure, or by interposition of fatty particles.

These deteriorations of cerebral and spinal matter give rise to a series of derangements, which show themselves in the worst forms of nervous disease—epilepsy; paralysis, local or general; insanity.

But not a single serious nervous lesion from alcohol appears without its warning. As a man who, when drinking at the table, is warned that the wine is beginning to take decisive effect on his power of expression and motion by certain unmistakable indications, so the slow alcoholic is duly apprised that he is in danger of a more permanent derangement. He is occasionally conscious of a failing power of speech: in writing or speaking he loses common words. He is aware that after fatigue his limbs are unnaturally weary and heavy, and he is specially conscious that a sudden fall of temperature lowers too readily his vital energies. The worst sign of impending nervous change is muscular instability, irrespective of the will; that is to say, an involuntary muscular movement whenever the will is off guard. This is occasionally evidenced by sudden muscular starts which pass almost like electrical shocks through the whole of the body; but it is more frequently and determinately shown in persistent muscular movements and starts at the time of going to sleep. The volition then is resigned to the overpowering slumber, and properly all muscular movement, except the movement of the heart and of the breathing, should rest with the will. But now this beautiful order is disturbed. In the motor centres of the nervous organisation the foreign agent is creating disturbance of function. The fact is communicated to the muscles by the nervous fibres, and the active involuntary start of the lower limbs rouses the sleeper in alarm. Ignorant of the import of these messages of danger, the habituated alcoholic continues too frequently his way, until he finds the agitated limbs unsteady, wanting in power of co-ordinated movement—paralysed.

Deeply interesting as these phenomena from alcohol are, I must leave them here, omitting many others equally significant and equally plain, when they are once pointed out, even to the unprofessional mind. Let it be understood that in each description I have recorded only what alcohol can physically do to the animal economy. It is not always the cause of all or any of these phenomena. They may be induced by other influences and other agents, but it is an agency capable of effecting them, and it is actively employed in the work.

On some of the Mental Phenomena induced by Alcohol.—The purely physical action of alcohol has been so far treated upon in the preceding pages. To that must now be added a few sentences on the influence this agent exerts over the mental functions. Of course, such influence is actually manifested by and through physical means, but as yet these are not sufficiently clear to enable us to trace out the mental aberration through the physical process that has led to it. It is better, therefore, and simpler to treat the present subject in the mere abstract, passing from the agent to its results, without reference to the intermediate line of connection between cause and effect. These mental phenomena, in the chronic phase, correspond to the phenomena which belong to the second and third stages of acute alcoholic intoxication.

Loss of Memory and Speech.—One of the first effects of alcohol upon the nervous system in the way of alienation from the natural mental state is shown in loss of memory. This extends even to forgetfulness of the commonest of things; to names of familiar persons, to dates, to duties of daily life. Strangely, too, this failure, like that which indicates, in the aged, the era of second childishness and mere oblivion, does not extend to the things of the past, but is confined to events that are passing. On old memories the mind retains its power; on new ones it requires constant prompting and sustainment.

If this failure of mental power progress, it is followed usually with loss of volitional power. The muscles remain ready to act, but the mind is incapable of stirring them into action. The speech fails at first, not because the mechanism of speech is deficient, but because the cerebral power is insufficient to call it forth to action. The man is reduced to the condition of the dumb animal. Aristotle says grandly, animals have a voice; man speaks. In this case the voice remains, the speech is lost; the man sinks to the lower spheres of the living creation, over which he was born to rule.

The failure of speech indicates the descent still deeper to that condition of general paralysis in which all the higher faculties of mind and will are powerless, and in which nothing remains to show the continuance of life except the parts that remain under the dominion of the chain of organic or vegetable nervous matter. Our asylums for the insane are charged with these helpless specimens of humanity. The membranes of the nervous centres of thought and volition have lost, in these, the dialysing function. In some instances, though less frequently than might be supposed, the nervous matter itself is modified visibly in texture. The result is the complete wreck of nervous action, the utter helplessness of will, the absolute dependence upon other hands for the very food that has to be borne to the mouth. The picture is one of breathing death; of final and perpetual dead drunkenness.

Dipsomania.—A second effect of alcohol on the mental organisation is the production of that craving for its incessant supply, to which we give the name of dipsomania. In those who are affected with this form of alcoholic disease a mixed madness and sanity is established, in which the cunning of the mind alone lives actively, with the vices that ally themselves to it. The arrest of nervous function is partial, and does not extend to the motor centres so determinately as to those of the higher reasoning faculties. But the end, though it may be slow, is certain. And the end is, as a rule, that general paralysis which I have just described. The dipsomaniac is, however, capable of recovery within certain limits on one, and only one, condition, that the cause of his disease be totally withheld.

Mania a potu.—The effect of alcohol on the mental functions is shown in yet another picture of modern humanity writhing under its use. I mean in the form of what may be called intermittent indulgence, to dangerous excess. This form of disease has been named the *mania a potu*, and it is one of the most desperate of the alcoholic evils. The victims of this class are not habitual drunkards or topers, but at sudden intervals they madden themselves with the spirit. They repent, reform, get a new lease of life, relapse. In intervals of repentance they are worn with remorse and regret; in the intervals of madness they are the terrible members of the community. In their final excitement they spread around their circle the darkness of desolation, fear, and despair. Their very footsteps carry dread to those who, most helpless and innocent, are under their fearful control. They strike their dearest friends; they strike themselves. Retaining sufficient nervous power to wield their limbs, yet not sufficient to guide their reason, they become the dangerous members of our community, whom our legislators, fearing to touch the cause of their malady, would fain try to cure by scourge and chain.

To us physiologists these "maniacs a potu" are men under the experiment of alcohol, with certain of their brain centres (which I could fairly define to you if the occasion were befitting) paralysed, and with a broken balance, therefore, of brain power, which we, with infinite labour and much exactitude, have learned to understand. Our remedy for such aberration of nervous function, if we were legislators, would be simple enough; we should not whip the maniac back again to the potu; we should try to break up the mania by taking the potu from the maniac. But, then, we are only physiologists. We have nothing to do with that £117,000,000 of invested capital, and we are not practical in reference to it.

Transmitted Disease.—The solemnest fact of all bearing upon these mental aberrations produced by alcohol, and upon the physical not less than the mental, is, that the mischief inflicted on man by his own act and deed cannot fail to be transferred to those who descend from him, and who are thus irresponsibly afflicted. Amongst the many inscrutable designs of nature none is more manifest than this, that physical vice, like physical feature and physical virtue, descends in line. It is, I say, a solemn reflection for every man and every woman, that whatever we do to ourselves so as to modify our own physical conformation and mental type, for good or for evil, is passed on to generations that have yet to be.

Not one of the transmitted wrongs, physical or mental, is more certainly passed on to those yet unborn than the wrongs which are inflicted by alcohol. We, therefore, who live to reform the present age in this respect, are stretching forth our powers to the next; to purify it, to beautify it, and to lead it towards that millennial happiness and blessedness which, in the fulness of time, shall visit even the earth, making it, under an increasing light of knowledge, a garden of human delight: a Paradise regained.

Summary.—In summary of what has passed, I may be briefness itself.

This chemical substance, alcohol, an artificial product devised by man for his purposes, and in many things that lie outside of his organism a useful substance, is neither a food nor a drink suitable for his natural demands. Its application as an agent that shall enter the living organisation is properly limited by the learning and skill possessed by the physician—a learning that itself admits of being recast and revised in many important details, and perhaps in principles.

If this agent do really for the moment cheer the weary, and impart a flush of transient pleasure to the unwearied who crave for mirth, its influence (doubtful even in these modest and moderate degrees) is an infinite simal advantage, by the side of an infinity of evil for which there is no compensation, and, while the evil is promoted from its root, no human cure.—*London Medical Record*, *Feb.* 10, 1875, *p.* 77; *Medical Press and Circular*, *March* 17 *and* 31, 1875, *pp.* 224, 265.

96.—ON JABORANDI.

By Dr. Walter G. Smith, Assistant Physician to the Adelaide Hospital, &c., Dublin.

In the early part of last year Prof. Gubler, of Paris, received from Dr. Coutinho, of Pernambuco, a limited supply of a Brazilian drug bearing the above title.

Its remarkable, and indeed unique, diaphoretic and sialogogue properties have attracted considerable attention, not only in France, but also in this country; and although the provings made with it have been few as yet, the concordance in the results noted by different observers is very striking. It seems that we have got possession of a drug which uniformly and distinctly exercises a powerful primary sudorific influence, and that, in the hitherto vague and uncertain class of diaphoretics we can now reckon at least one medicine whose action in promoting the cutaneous exhalation appears to be undeniable.

In investigating a new drug it is essential, in the first place, to determine with accuracy its botanical origin, and to be assured of the identity of the samples which fall into the hands of different experimeters.

The names *jaborandi* and *jamborandi* appear to be generic terms commonly used in Brazil to designate stimulant, sudorific, and sialogogue plants. From an examination of the specimens furnished by Dr. Coutinho, with the Brazilian plants in his own herbarium, Prof. Baillon was led to identify jaborandi with Pilocarpus pinnatifolius (Lemaire), N. O. Rutaceæ.

Some doubt was entertained as to the correctness of this opinion, but strong confirmation of its substantial accuracy is afforded by Mr. E. M. Holmes, who has carefully described the botanical characters of a specimen of Pernambuco jaborandi obtained through Messrs. Hearon, Squire, and Francis, and he concludes that it is derived from a species of Pilocarpus, probably P. pinnatifolius. On this point certainty cannot be arrived at until the flowers are examined. The drug, as imported at present, consists of the broken leaflets of a large impari-pinnate leaf, which is dotted with a number of pellucid glands.

The odour is very characteristic, and resembles that of a mixture of Indian hemp, matico, and cubebs. When chewed the taste is piquant, and excites a sensation of glowing heat on the tongue, like that caused by pellitory root —(Martindale.) *Dublin Journal of Medical Science, March* 1875, *p.* 231.

97.—ON JABORANDI.

By Dr. Sydney Ringer and Dr. Alfred P. Gould.

This active and interesting drug, long in use in South America, was lately brought from Pernambuco to Paris by Dr. Continho. Dr. Gubler and M. Rabuteau confirm Dr. Continho's statement concerning its powerful diaphoretic and sialogogue properties. The dose for an adult is sixty to ninety grains, infused in boiling water. Dr. Continho recommended that the patient should drink the infusion with the suspended leaves, and then go to bed and cover himself with warm clothing. In about ten minutes the face, ears, and neck become deeply flushed; then soon drops of perspiration break out over the body, and at the same time the mouth waters; in a short space the perspiration rapidly increases, the sweat running down the body and soaking the clothes, whilst the salivation becomes profuse, running from the mouth sometimes in an almost continuous stream. In three or four cases the saliva amounted to an imperial pint, 22 oz., and 27 oz. respectively. The sweating and salivation continue from two to four or five hours, and simultaneously decline. Dr. Gubler has shown that the drug increases the bronchial secretion, and he further asserts that it sometimes produces diarrhœa. In a communication concerning the action of this medicine on some lads between the ages of eight and twelve lately published in the Practitioner, we confirmed these statements, with the exception of that relating to diarrhœa, and drew attention to the influence of this drug on the temperature, pulse, brain, &c. During the sweating we found that the temperature fell about one degree, the reduction persisting for the rest of the day; and that the lowest temperature was reached about an hour and a half after the administration of the medicine. In one case the fall began immediately, in another case in forty minutes, and in another instance in eighty minutes. In each experiment the pulse became considerably quicker, the increase varying from forty to fifty beats, the beats being quickest in from twenty-five to eighty minutes after the dose. The quickened pulse continued more than four hours. In one lad with intermittent pulse the medicine entirely removed this irregularity. The drug often produced nausea or sickness, which occurred two or three hours after taking it; it also occasioned considerable drowsiness, the lads falling asleep during the observations. The flushing of the face was noticed only when sweating occurred; and in a short time the flushing was succeeded by marked pallor, accompanied by some prostration. We tried to show that probably the fall of temperature was due to the perspiration and to increased radiation of heat from an increased quantity of blood flowing to the skin.

Our later observations prove a marked antagonism between jaborandi and belladonna. Belladonna checks the secretion from the skin, the salivary glands, the mucous membrane of the nose, bronchial tubes, stomach, and intestines, and dilates the pupil and contracts the arterioles; jaborandi, on the other hand, increases enormously the perspiration and saliva, and, in a much less degree, the secretion from the mucous membrane of the nose, the bronchial tubes, and the stomach and intestines. Robin asserts, moreover, that it lowers arterial tension, probably by paralysing the vaso-motor nerves, and thus causing dilatation of the arterioles. Belladonna excites delirium, whilst jaborandi often produces sleep. This antagonism was well displayed in four instances. On three occasions, to three different men, we administered sixty grains of jaborandi, and when the perspiration and salivation were profuse we injected subcutaneously $\frac{1}{100}$ of a grain of atropia. In five minutes the perspiration and salivation were considerably diminished, and in from ten to twelve minutes the skin was preternaturally dry and the salivation was checked, but in one case continued a little after the cessation of the perspiration. It curiously happened that a lad was admitted into University College Hospital poisoned by atropia. He had taken one grain of the alkaloid five hours before treatment. His tongue and mouth were quite dry. A quarter of an hour after taking thirty grains of jaborandi his mouth became much less dry and in an hour he was sweating freely and his mouth was naturally moist.

Belladonna, it is well known, arrests the secretion of milk, and we were anxious to ascertain whether jaborandi was antagonistic to belladonna in respect to its influence on this secretion. We administered thirty grains of jaborandi to a woman thirty-eight years old, confined of her ninth child four months previously. During suckling she had very little milk, and the quantity had become much less of late. We gave her the medicine at 10 a.m. She had suckled her child seven hours before. In ten minutes the drug produced its usual symptoms ; in half an hour her breasts, which previously were flaccid, became tumid and distended, and on pressure yielded considerably more milk. In forty minutes the increase was still more marked, jetting forth in four or five streams. In eighty minutes the milk was less abundant, though considerably more so than before the experiment. The woman herself noticed the decided increase of her milk. To another woman, aged twenty-five, whose child is thirteen months old, we gave two doses of thirty grains, as the first had no effect. She emptied her left breast every ten minutes by pressure, and each of the three first emptyings yielded 40 minims. As soon as perspiration and salivation became free the quantity rose to 80 minims. The next time yielded 100 minims, the following 155 minims, the next time 80 minims. The salivation and perspiration at this time ceased. The next observation yielded 125 minims, the next 87 minims, the next 70 minims, and the last 40 minims. This woman, whose case is not included in those given before, complained of severe pain over the pubes, with desire to urinate, the pain immediately ceasing after micturition.

In some of their effects, however, jaborandi and belladonna agree. Thus, both flush the face and quicken the pulse; and both affect children much less than adults. Belladonna quickens the pulse by its paralysing influence on the pneumogastric, and possibly by stimulating the sympathetic nerves. We have no evidence that jaborandi paralyses the pneumogastric, or stimulates the sympathetics supplying the heart, but M. Robin has shown that it lessens arterial tension, probably by dilating the arterioles ; and it is well known that dilating the arterioles, and thereby allowing the blood to pass more quickly from the arteries to the veins, quickens the heart-beats. Hence it is very probable that the quickening of the pulse by jaborandi is due to its influence on the arterioles; and thus, instead of affording an instance of similarity of action between these two drugs, affords another example of their antagonism, for belladonna contracts the arterioles. While referring to the relations of these two drugs, we may point out that both sometimes affect the bladder. Jaborandi, as we have seen, causes pain over the pubes, with desire to pass water, the pain subsiding when the bladder is emptied. These facts render it probable that jaborandi causes contraction of the bladder, for it does not augment the quantity of the secretion.—*Lancet, Jan.* 30, 1875, *p.* 157.

98.—RHAMNUS FRANGULA AS A SUBSTITUTE FOR CASTOR OIL.

By Dr. J. C. Ogilvie Will, Assistant-Surgeon to the Aberdeen Royal Infirmary.

[There are certain objections to castor oil as an aperient, but whether it will ever be superseded by any aperient possessing all its advantages without its disadvantages is questionable. The rhamnus frangula is however an aperient for which the writer claims these desirable properties.]

The advantages of castor oil as a mild purgative when compared with others used for a like purpose are so well known that it is almost unnecessary to recapitulate them; but, for the sake of comparison, it may be as well to call them to mind, and they may be summed up in the following few words:—Certainty and rapidity of action; little griping and no constitutional disturbance; the production of thin fæculent, not watery, stools; and general applicability.

The main disadvantage is its disgusting flavour; also the nausea which this frequently induces, and the disagreeable eructations which follow its ingestion, disguise it in whatever way one can; even when given enclosed in capsules, the eructations, after the rupture of the gelatine film takes place, cause loathing and disgust.

The medicine to which I now desire to direct attention is *Rhamnus frangula*. To prevent those who are not acquainted with *R. frangula* from falling into an error which I have already witnessed, let me state that the shrub I speak of is not the common buckthorn or *Rhamnus catharticus*, but the black alder, or *R. frangula*, and that the former differs as widely from the latter in the effects it produces as does croton oil from castor oil—the one being an active cathartic, causing nausea, dryness of the throat, thirst, and tormina; the other a mild laxative, its action being unaccompanied by griping or other disturbing symptoms.

The part of *Rhamnus frangula* used is the bark, and the preparation I have always prescribed has been a fluid extract, each fluid drachm of which contains an equivalent of one drachm of the bark. This extract is a dark brown thickish fluid, with a rather sweetish and far from disagreeable taste. The dose of course varies according to the effect desired, the age, and the condition of the patient; but I have proved from experience that the quantity suggested by the makers of the extract—viz., one to two drachms—is, as a rule, too small for an adult. For a child one drachm is sufficient, but for an adult a dose of from two and a half—that is, an average dessert-spoonful—to five drachms is necessary, and I generally order the following: ℞. Extracti rhamni frangulæ liquidi, ʒ v., aquæ ad ℥ j., M. sig.; the half to be taken in a wineglassful of cold water, and should the bowels not move in four hours the remainder to be given; or the first dose at night, and the second in the morning should no motion have taken place. The effects are much akin to those I have mentioned as the advantages of castor oil, but there is no nausea, there are no eructations, and there is no griping. With regard to the last symptom, though it is, as I have already stated, but slight in the case of castor oil, it is hardly ever present here in even the least degree, only one patient of the many to whom I have given it complaining of it at all, and in her case the bowels had not been opened for four days, and she had only a very little uneasiness. The stools are not generally loose, and never watery; it usually acts only once, but in two of my cases three motions followed five drachms. It seems to have, in addition, as first stated by Mr. Giles, tonic and aromatic qualities, by which the muscular action of the bowels is slightly stimulated; and it is probably to this that its usefulness in habitual constipation is to be attributed. I have now prescribed it in many different forms of disease, and in all it has answered well. I think that it will prove particularly useful in children; in those suffering from hemorrhoids, or other affections of the rectum; after surgical operations about the pelvis or abdomen, in inflammatory or spasmodic diseases of the genito-urinary organs; in pregnant and puerperal females; or, to quote the words of Christison when speaking of oleum ricini, "in all circumstances where it is desirable to move the bowels gently without occasioning local irritation or general disturbance."—*Medical Times and Gazette*, *Feb.* 6, 1875, *p.* 141.

99.—ON CHLORAL.

By Dr. Walter G. Smith, Assistant Physician to the Adelaide Hospital, Dublin.

In Pharmacy.—Mr. R. Fairthorne suggests the subjoined formulæ, based on the considerable powers as a solvent which chloral possesses. Glycerin affords a convenient agent for forming solutions with chloral and the alkaloids, and the following will be found, when properly combined, to produce permanent and elegant preparations, viz.:—

Chloral Glycerite of Morphia.—℞. Morphia (powd.) 5 grains; chloral hydrate, 1 drachm; glycerin, half a fluid ounce. M. Sec. art.

Chloral Glycerite of Veratria.—℞. Veratria, 5 grains; chloral hydrate, 1 drachm; glycerin, half a fluid ounce. M. Sec. art.

Ointment of Chloral and Veratria.—(Corresponding in strength to the Ung. Veratriæ, U.S.P.)—℞. Veratriæ, 10 grains; chloral hydrate, ʒ i; water, six drops; lard ointment, half an ounce. M. Sec. art.

Chloral Glycerite of Morphia and Camphor.—℞. Morphia, 5 grains; chloral and camphor, each 1 drachm; glycerin, half a fluid ounce. M.

Lotion of Chloral and Iodine.—℞. Iodine, 20 grains; iodide of potassium, 6 grains; glycerin, 1 fluid ounce; chloral hydrate, 2 drachms; M. Sec. art.

☞ "Chloral can also be combined with collodion, in which it dissolves after the addition of a few drops of alcohol."

A solution, consisting of 9 parts of hydrate of chloral and 3 of water, is capable of dissolving the following substances to the extent named:—

One grain of morphia is dissolved by a portion of the liquid containing 12 grains of the hydrate; 1 grain of veratria by a portion containing 5 grains; and 1 grain of atropia by a portion containing 20 grains. These substances should be mixed, in the state of powder, with the solvent, and heated by means of a water-bath, with occasional agitation. The solutions thus made are in a convenient form for employment, either alone or when mixed with oils, ointments, or with glycerin. Camphor, too, is freely dissolved by them. —(Phar. Jour., Dec. 26, from Amer. Journ. of Pharm.)

Action on the Blood.—Feltz and Ritter have made some interesting observations upon this subject, but which are too lengthy for insertion here. Their conclusions are quoted from the Comptes Rendus, Aug. 3, in Rép. de Pharm. 10 Sept., and in Lond. Med. Rec., Aug. 26.

Some months since M. Vulpian communicated to the Académie de Médecine the result of numerous experiments on the intra-venous injections of chloral, which he had performed with the object of keeping the animals quiet, and so facilitating vivisections. In three instances out of sixty M. Vulpian has observed a very serious accident, which it behoves those surgeons who advocate the intra-venous injection of chloral in man to consider. In three dogs he found that considerable hæmaturia supervened during the injection. (Feltz and Ritter ascertained that the urine of dogs contained hæmatoglobin solution after intra-venous injection of chloral.) After death no lesion of the urethra, bladder, or ureters was found, but the bladder and ureters were full of blood, which was derived from the congested kidneys. This hæmaturia is produced by the rapid elimination of the chloral. M. Vulpian asks, and rightly so, may not the intra-venous injection of this drug in man determine similar phenomena, and he is unable to recommend surgeons to practice such injections.—(Journ. des Connaiss. Méd., 15 Juin, 1874.)

In Hydrophobia.—An interesting case is recorded in the Rép. de Pharm., 10 Juillet, 1874, in which *thirty-three grammes* of hydrate of chloral (13 grms. at first and 20 grms. on the day following) were injected into the veins of a man, aged thirty-one, suffering from hydrophobia, which he had contracted from the bite of a dog six weeks previously. Each injection of chloral was followed by a sound sleep, and the man died shortly after in a paroxysm of orthopnœa. The autopsy was made forty-eight hours after death, and general visceral congestion was noted. But, although the veins were minutely examined with great care, no trace of a thrombus or embolus was found.

The case is curious, as showing what a large quantity of an active and irritating drug can be introduced into the course of the circulation without inducing coagulation of the blood.—*Dublin Journal of Medical Science, March* 1875, *p.* 240.

100.—CROTON CHLORAL.

Dr. R. Engel states that according to Liebreich, croton chloral, administered internally, rapidly produces slumber, similarly to ordinary chloral, but without its use being followed, as in the case of the latter, by lowering of the pulse and respiration. Even after the administration of very high doses of croton chloral the pulse is not reduced. The author thinks that it is not to the first product of decomposition (allyl-chloroform) that hypnotism is due. Allyl-chloroform, being very unstable, breaks up immediately, and he thinks therefore the action of croton chloral should be attributed to bichlorallylene. Moreover, Liebreich has found that bichlorallylene, when administered to animals, does not reduce the circulation or respiration. Comparing the effects of chloroform and chloral on the one hand, and bychloride of ethylene and bichlorallylene on the other, he considers himself justified in asserting that whilst the trichlorinated substances act upon the brain, spinal cord, and heart, the bichlorinated substances act only upon the brain and spinal cord. In none of his experiments has Liebreich recognised any hurtful effects on the stomach or any other organs; and he reports that he has employed it very successfully in cases of facial neuralgia, the pain ceasing frequently before sleep is produced. Jules Worms, however, asserts that croton chloral is not so generally tolerated as chloral, and George Gay says that its narcotic action is more uncertain. Croton chloral is hypnotic in doses of from 7 to 15 grains. It may be administered in solution in water, or in glycerine. The following is the formula employed by Jules Worms:—

Croton chloral, 1 gramme; glycerine, 60 grammes; water, 60 grammes; oil of peppermint, 3 drops; simple syrup, 25 grammes.

In a paper contributed to the American Practitioner by Mr. Louis Diehl, of Louisville, he remarks that croton chloral hydrate differs from the ordinary chloral hydrate by its sparing solubility in cold water, and in the exceedingly irritant character of its vapour. Chloral hydrate, on the contrary, is freely soluble in water, and its odour when pure is not irritating. From these experiments it follows that croton chloral hydrate (commercial) may be dispensed in aqueous solution of a strength corresponding to two grains in the fl. drachm, and Mr. Diehl gives the following formula:—

℞. Croton chloral hydrate, gr. viij; warm water, fl. ℥j; simple elixir, fl. ʒ vij. Ft. solut.

Owing to the alcohol contained in the simple elixir, a larger quantity than two grains to the fl. drachm could, if desirable, be incorporated and held in solution by the above mixture.—*Practitioner, Dec.* 1874, *p.* 448.

101.—THE DANGERS OF ANÆSTHETICS.

By Joseph T. Clover, Esq., London.

[The danger of chloroform and the comparative safety of ether having been brought to notice by Mr. George Pollock in the Lancet. Mr. Clover writes:]

I regard ether as much less dangerous than chloroform as they are generally given; for although I feel as confident in giving a proportion of thirty-three minims of chloroform to a thousand inches of air, as I should in giving ether, I have seldom given a stronger dose without noticing that it caused too much depression of the heart's action. Even this proportion, if inhaled by several deep inspirations, is liable to cause such depression, that if the pulse were not kept under observation, and the chloroform removed or diminished, it might, I believe, cause death. It is, I think, greatly to the credit of the profession that deaths from chloroform are not more frequent, for besides its liability to cause choking and apnœa, which are remediable, it may produce total arrest of the heart's action, which is not so.

The mixture termed "bychloride of methylene," is never sold without containing a considerable quantity of chloroform, and as it is much less volatile than the other ingredients, it escapes less readily. A bottle not very well stopped, or frequently opened, will contain an increasing proportion of chloroform. A flannel used for several persons without being dried will have a larger proportion of chloroform than at first. Mixtures of ether and chloroform would long since have been favourite anæsthetics but for this circumstance. It is obvious to all that we cannot safely give strong chloroform vapour as we can ether, and therefore the larger the quantity of chloroform in the mixture the greater the need of caution.

I am not aware of the evidence that "methylene bichloride" is safer than chloroform. Considering that chloroform is found in almost every surgery and druggist's shop in the country, and that the methylene is both expensive, and, on account of its volatility, a great deal wasted, I think the number of patients who have inhaled it must be very small compared with those that have taken chloroform.

Ether is so much less liable to arrest the movement of the heart, that if there were not some serious objection to its use, chloroform would not have been so quickly established in its place. The excitement of a small quantity, the choking produced by its free use, and the subsequent intoxication are the chief reasons against it. These may be almost entirely got rid of by improved methods of administration. I have tried many ways of giving ether, but have always found more resistance to breathing it than chloroform until I made use of nitrous oxide to render the patient partially unconscious, and to assist the action of the ether.

Of nitrous oxide I think it may be said that it is the most pleasant of our anæsthetics, that although it destroys animal life it always stops the breathing some time before it stops the heart, and that if the chest is moved enough to admit a very little air into the lungs natural breathing returns more quickly than when it ceases from other causes. It is very rapid in its action, especially on children, and for tenotomy, reducing dislocations, moving stiff joints, and extracting teeth, it is unequalled. But it is not fitted for operations that require that the patient should be still for five minutes. Convulsive twitchings and delirium of a boisterous character are apt to occur. The combination of gas with ether modifies beneficially the character of both.

My first plan was to give gas as usual, and when insensibility occurred, to apply the ether inhaler. It sometimes answered well; at others it produced much choking, or else allowed the patient to recover partially and struggle. My next plan was to turn the current of gas, and make it pass through a vessel of ether as soon as the patient was made unconscious by pure gas. This succeeded better so far as getting the first supply of ether into the system, but after it became necessary to admit air, I could not supply the bag with ether with sufficient accuracy. It answered well for increasing the anæsthesia of gas when a long dental operation had to be performed, but for surgical operations generally it was not satisfactory.

The plan I now adopt is this: I give nitrous oxide only at first, and by degrees: without removing the face-piece, I turn a stop-cock, which allows a portion of gas, during expiration, to pass through a vessel containing ether, into an india-rubber bag, exactly like the supplemental bag; at the next inspiration this gas returns, bringing with it a portion of ether vapour, and mixes with the pure gas coming from the gas-bag. As the way to the ether is opened, the way to the gas-bag is closed. As soon as the ether begins to be supplied the tap of the gas bottle may be screwed tightly, and the escape-valve closed.

In turning on the supply of ether, I watch for signs of its irritating the throat, and if it excites coughing or swallowing, I turn back the ether, to lessen its pungency.

The patient is usually ready for the operator in thirty seconds; if any air gets between the face-piece it may require two or three minutes. As soon as the least stertor is heard, or any convulsive twitching of the limbs is visible, I cautiously admit a little air, and keep supplying as much ether as I can without exciting cough. After about two minutes, I remove the face-piece every fifth or sixth inspiration; unless, on account of air getting under the face-piece, the patient remains in a satisfactory state of coma without it. After a certain amount of ether has been taken, the inhaler may be held so lightly as to admit a considerable quantity of air under the face-piece, but it is not often well to remove the inhaler altogether till the end of the operation.

On recovery, although there is usually some excitement, and occasionally hysterical symptoms, they pass away the sooner, because there is less ether in the body to be thrown off.

I rarely notice the tracheal rhoncus which is common when etherisation is kept up for as long as a quarter of an hour in the usual way. The instrument was made by Mayer and Meltzer.

Those who have the gas inhaler with supplemental bag, which I introduced six years ago, will find a substitute for this apparatus by merely putting several pieces of sponge into the supplemental bag and pouring two or three ounces of ether into them. The material of this bag should be etherised india-rubber. Of course, it must be so arranged that liquid ether cannot be drawn into the face-piece.

There are few operations that this instrument is not suited for, where the head of the patient is in such a position that the nose and mouth can be covered over by the face-piece. In some delicate operations upon the eye I should still prefer chloroform, as it causes less bleeding, and in operations about the mouth and nose I should give ether freely at first, and then give chloroform during the operation, if it was one of long duration. The best way of giving chloroform in these difficult cases is beyond the scope of the present letter.

I have given ether after gas in more than 900 cases, and in more than 700 I have used this apparatus. The majority have been dental cases too long prolonged for the use of gas alone, but they include all the most severe surgical operations, and some of suspected fatty degeneration of the heart. No death occurred. I have not wanted to draw forward the tongue.

I resorted to artificial respiration twice: In one of these cases sickness followed, but the other recovered better than from a full dose of chloroform. I have also compressed the sternum with one hand on three or four occasions, when I thought the breathing ineffective. Vomiting is rare, unless when food has been taken within four or five hours. When it has happened it has been in no instance a source of danger.—*Lancet, Jan.* 2, 1875, *p.* 32.

102.—ON THE DANGERS ATTENDING THE USE OF ANÆSTHETICS.

By the Editor of the Lancet.

The dangers of anæsthesia, so far as we understand them, are death beginning at the lungs, and death beginning at the heart. When a rabbit or other small animal is killed by chloroform, its death begins at the lungs. It perishes by asphyxia; and, after apparent death, which would pass into real death, save for the aid of art, it may, as Dr. Richardson has shown, be easily resuscitated. The same condition has more than once been produced in the human subject, and Ziemssen and others have recorded cases in which, by faradisation of the phrenic nerve, or by other methods of maintaining respiration, life has been restored rather than preserved. We think it probable that death beginning at the lungs might be occasioned by ether, and that, if improperly treated, it might become death real and irretrievable. All such cases, however, would probably be remediable if taken in time; and would require nothing but the methodical conduct of artificial respiration. With chloroform and bichloride of methylene there is also the danger of death beginning at the heart, by a sudden paralysis over which the respiration exerts no influence; and it is probable that such cases are always fatal. From this risk it may, perhaps, be said that ether is wholly free; for there is a remarkable concurrence of testimony with regard to its power to sustain the heart, and also, by maintaining dilatation of the capillaries, to prevent the heart from being overloaded by blood driven in from elsewhere. We should hesitate to admit with the Americans that ether is absolutely safe; but we are prepared to believe that any small dangers which may attend upon it are under the control of vigilance and good management. With regard to chloroform the same cannot be said; and, as long as its employment is continued, it will continue to claim its occasional victims. It is surely incumbent upon every surgeon to guard the life of his patients, and to keep himself in the right, by the systematic employment of the anæsthetic which, so far as knowledge now extends, is at once as effectual as any other and more safe.—*Lancet, Jan.* 30, 1875, *p*, 169.

103.—ETHER v. CHLOROFORM.

By R. Brudenell Carter, Esq., and J. Warrington Haward, Esq.

[Mr. Carter writes to the Lancet as follows:]

At the International Congress of Ophthalmologists, held in London, in 1872, Dr. Joy Jeffries, of Boston, U. S. A., read a paper in which he strongly advocated the use of ether, and he did so on the twofold ground that chloroform is dangerous to life, while ether is *absolutely safe*, and that there should be no deaths in ophthalmic surgery. In the debate which followed, I said that, unless my memory deceived me, there had been deaths from ether, and that ether did not produce sufficient muscular relaxation for operations upon the eye. Dr. Jeffries rejoined that the supposed deaths from ether had been fully investigated in America, and had all been traced to other causes; that it would be impossible to destroy human life by ether vapour, except negatively, by depriving the patient of air; that any practitioner in America who had a fatal case of chloroform administration would almost certainly be convicted of manslaughter; and that imperfect muscular relaxation depended upon an imperfect method of administration. Upon this I invited him to come and administer ether at St. George's, and when he did so I operated upon several patients to my entire satisfaction; in one case extracting senile cataract from both eyes, without the smallest degree of reflex muscular contraction being produced. Since that time I have almost discarded chloroform and bichloride of methylene, both in hospital and in private practice, and, for adults, use ether as my sole anæsthetic. The ophthalmic operations at St. George's are probably equal in number to all the others put together; and an experience of two years and a half has neither given us a single case of imperfect action nor produced a single unfavourable or alarming symptom. The secret of administration is to give ether enough, and to exclude external air until insensibility is produced. We sometimes use chloroform for young children, who generally take it kindly, and we sometimes give a few whiffs of chloroform to render irritable air-passages insensitive to ether, but that is all. The contrast between the effects of the two agents is very striking. An old patient, brought deeply under chloroform, generally becomes very pallid, and bathed in sweat; but the same patient under ether would have a flushed face, and would be sustained and stimulated instead of being depressed.

Shortly before the reading of the paper to which I have referred, it was my misfortune to administer chloroform to a robust, healthy girl of seventeen, who died under its influence during an operation for strabismus. Within a week of her death two others took place in London under similar circumstances, one in the ophthalmic department of a general hospital, and one in the private house of an ophthalmic surgeon. I feel very strongly that these events ought not to recur. Chloroform and bichloride of methylene have no advantage over ether, except that they act a little more quickly; and the gain of a few seconds affords no justification for the sacrifice of human life. It seems to me that surgeons who persist in the administration of the possibly deadly agents incur responsibilities which should not be lightly undertaken in the face of better knowledge. At a coroner's inquest the question, "Would not this result have been avoided by the use of ether?" would not only be difficult to answer at the time, but it might lead to subsequent complications of a painful character.

[Mr. J. WARRINGTON HAWARD writes upon the same subject:]

An examination of the fatal cases of chloroform inhalation shows the mode of death to have been almost invariably by failure of the heart's action, and this failure is generally sudden.

Now, the committee appointed by the Royal Medical and Chirurgical Society to investigate the effects of chloroform found that "the simple failure of respiration, whilst the circulation remains good, almost always betokens a recoverable condition;" but that "the failure of the circulation to any considerable extent always involves extreme peril;" and "after the heart has stopped, recovery is but just possible, and is by no means the usual result of attempts to resuscitate. So that the danger from chloroform is precisely of that kind which it is most difficult to guard against, and which is most hopeless when it occurs. On the other hand, the same committee state that ether vapour stimulates the heart's action, and that the pressure in the vessels is maintained until there has been a manifest failure of the breathing. And Dr. Snow proved that it was impossible to paralyse the heart by ether inhalation. It is this stimulating property which gives to ether its greater safety, and enables us to use it not only as an anæsthetic, but as an antagonist to the shock of an operation. Under the influence of ether, as I have often pointed out, the patient may have a better pulse after than before even a severe operation. Besides this, he is saved the distressing depression which so often follows the inhalation of chloroform; and persons who have inhaled both ether and chloroform have several times expressed to me the great difference they have experienced in this respect from the two drugs.

This, and the absence of after-sickness (another of the advantages of ether), have been, and especially, noticeable in several cases of ovariotomy for which I have administered ether.

It is needless to point out how great an advantage it is to those who, without any special experience, are called upon to give an anæsthetic, to be able to use one so free from danger as is ether. Indeed, in an emergency, a patient, after being rendered insensible by ether, may be safely kept under its influence by an unskilled assistant.

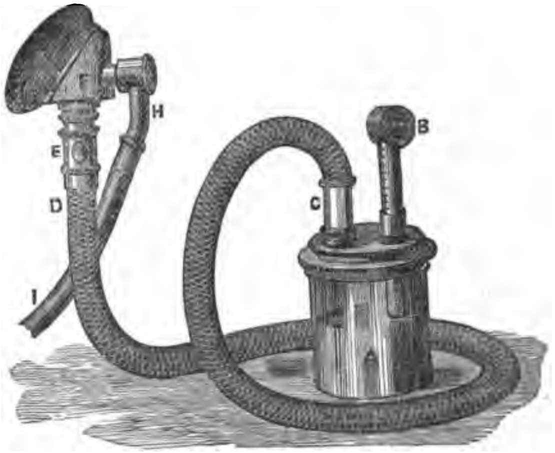
Moreover, when a person has been fully narcotized by ether, its anæsthetic effects last much longer than chloroform, so that a considerable operation, such as removal of the upper jaw-bone, may be performed without the necessity for renewing the inhalation.

The disadvantages of ether are, the pungency of its vapour, the somewhat noisy excitement which sometimes occurs during recovery from its effects, and the amount of salivary secretion which it excites. The last is a very decided inconvenience in plastic operations within the mouth, but the other two objections are trifling when compared with the comfort of feeling that you are dealing with a safe anæsthetic. In fact, its relative safety should surely be that which should chiefly influence us in the choice of any anæsthetic.

I do not doubt that it is possible to kill a person with ether, and, as I have elsewhere said, it is a mistake to claim for any anæsthetic absolute safety. We can scarcely expect to render a person profoundly insensible without incurring some danger; but it is of great advantage to use an agent the danger from which usually occurs only with sufficient warning to enable us to avert it. This is the case with ether; and I think Mr. Pollock has done both the profession and the public a service in pointing out the responsibility of those who persist in using the more dangerous anæsthetics.—*Lancet, Jan.* 9, 1875, *p.* 68.

104.—NEW ETHER INHALER.

The apparatus consists of a glass chamber (A) capable of holding ten ounces of ether. The sliding tube of the inlet valve (B) is graduated into ounces for the purpose of measuring the consumption of ether. The pipe (C D) conveys the ether vapour to the face-piece (F). The edge of the mask is surrounded by a water-cushion for the purpose of more closely fitting the face. The shutter valve (E) is for regulating the admission of air either at the beginning of an operation or during its progress. The pipe (I) and the valve (H) convey the expired air to the floor. The glass vessel (A) is half immersed in water heated to 100° Fahr. in order to promote a more rapid and equable evaporation of the ether. For this purpose the metal case in which the apparatus is carried is used as a bath, the glass vessel being placed in the cell and surrounded by the warm water. The ether boils at about 96° Fahr., but before the quantity contained in the chamber (A) has reached that point the temperature of the surrounding water has fallen. The time required to produce insensibility to pain is from three minutes and a half to four minutes and a half, and about an ounce of ether is used in a quarter of an hour.



The apparatus is manufactured by Mr. Hawksley, of Oxford Street.—*Lancet, Feb.* 13, 1875, *p.* 251.

SYNOPSIS,

(ARRANGED ALPHABETICALLY), CONTAINING

A SHORT ABSTRACT OF THE MOST PRACTICAL ARTICLES IN THIS VOLUME, SHOWING AT A GLANCE THE MOST IMPORTANT INDICATIONS OF TREATMENT PUBLISHED BY DIFFERENT WRITERS WITHIN THE HALF-YEAR.

AFFECTIONS OF THE SYSTEM GENERALLY.

ACTION OF THE SEPTINOUS POISONS ON THE PRODUCTION OF FEVER.—The following theory to account for the action of the poisons of contagious disease, especially in the production of fever, is new: Poisons exert their deleterious action through the property they possess of setting at liberty the oxygen of the blood in undue quantities in the extreme circulation. By way of experimental demonstration, Dr. Richardson took specimens of solutions of peroxide of hydrogen, and inoculated them with points of different organic poisonous animal substances,—viz., decomposing blood, pyæmia, poison, pus, fibrine, and vaccine lymph. In the presence of all these bodies, oxygen began to be immediately liberated from the solution. Other organic substances—mucus for instance—would not liberate oxygen, a fact which could be applied (as was shown by an experiment) for diagnosing mucus from purulent matter. Proceeding with his demonstration, Dr. Richardson charged blood with oxygen from the peroxide solution; then, by inoculating this blood and setting oxygen at liberty, he showed the temperature of the blood rose 4° Fahr. In his further observations, he explained that these organic disturbing substances are themselves decomposed in the process of the change they excite, and that they all seem to be derived originally either from fibrine or cellular tissue. The conclusion arrived at, and which was advanced admittedly as a theory in its present state, is that the fever-producing poisons act in the way described by setting oxygen free in the blood in undue proportion. (Dr. B. W. Richardson, p. 17.)

AGUE NOT OWING TO MARSH POISON.—Ague is not owing to marsh poison. There is no such thing as marsh poison. All forms of intermittent fever are owing to chills after extreme heat, and the reason they occur in marshy districts is, the rapid precipitation of moisture after sundown. But if a man sleep two feet above a marsh, provided he is perfectly warm in a good bed, he does not take fever. The generation of fever in districts generally devoid of soil, and in sandy districts, is explained by this hypothesis, but it cannot be on the theory of marsh poison. If there be such a poison as "malaria," we cannot absolutely guard ourselves against it; but, if it be true that the diseases attributed hitherto to malarious miasms are really due to severe chill after great heat or great exertion, we can arm ourselves against them. All that is necessary is to keep one's self warm at nights and carefully guard against chills. If this is done we may reside at Sierra Leone with impunity—taking care to warm the house with a stove during the wet season, and to wear flannel. (Drs. Oldham and Inman, p. 18.)

GOUT FROM LEAD POISONING.—It is remarkable that not only is genuine gouty inflammation of the joints caused by lead, but of a necessity all the other usual concomitants of gout. Therefore, it is constantly observed that workers in lead not only have chalky joints, but have granular kidney, thickened blood-vessels, and the other changes constantly met with in gout, and which are almost synonymous with those of Bright's disease. (Dr. S. Wilks, p. 49.)

Rheumatic Fever.—*Non-Nitrogenous Diet.*—In Dr. Pavy's excellent work on food, Mr. Mahomet in some experiments on a non-nitrogenous diet found the urine became alkaline. He says: "The mode in which I gave the non-nitrogenous diet was as follows: Butter was melted in a jug placed in a water bath, and the liquid oil was poured off. Arrowroot cakes were made with a portion of this butter, and a little sugar was added. A good cook can thus make very agreeable cakes, which should not be in the least tough. These arrowroot cakes were eaten by my patients with great relish when buttered; they also took arrowroot jelly sweetened." On reading these statements it occurred to me that the effect produced upon the urine, viz., the great diminution in the amount of free acid and of urea, made it extremely probable that a non-nitrogenous diet might be advantageously employed in the treatment of rheumatic fever; for, as it is scarcely necessary to remind my readers, the urine in this disease contains a large quantity of urea and of uric acid, the index of an excess of nitrogenous matter undergoing more or less perfect oxidation in the system. The alkaline treatment neutralises this excess of acid not only in the urine but in the blood, and prevents its ill effects. (Dr. J. Andrew, p. 52.)

Cynara (*Artichoke*).—The common artichoke in the form of tincture and extract is a remedy of considerable value in rheumatic fever. As long ago as 1833 I published some cases treated with it, and ever since I have employed it with undiminished confidence. In a case recently treated the following form was used:—℞. Potassæ bicarb. ʒ j; aquæ camph. ad ℥ viij; tincturæ cynaræ ℥ j; syrupi papaveris, alb. ℥ ss. M. Two tablespoonfuls were ordered to be taken every four hours, with as much of the extract of cynara as would make two moderately sized pills. No other medicine has in my experience appeared to be so efficacious as cynara in rheumatism, acute or chronic, but I have frequently heard of its having failed in other hands; and I suspect the reason is that it is often perpared from leaves gathered at an improper time, when there is no medicinal virtue in the plant. The leaves should be gathered just before the top of the vegetable is fit for food, and whilst they are full of juice; if left until the top is cut off for cooking purposes and the plant begins to wither, no good will be derived from it, and, if given, it would be condemned as useless and inert. It is absolutely necessary to pay attention to the time the leaves are gathered, and to be careful in the preparation of the medicine; and it would be perfectly safe to increase the dose of the tincture gradually from one to four drachms should the case prove obstinate. (Dr. E. Copeman, p. 53.)

Rheumatism and Gout.—*Trimethylamine.*—The use of trimethylamine in rheumatism and gout was shown as long ago as twenty years since, by Dr. Awenarius, a Russian physician. It can be obtained from various sources. That sold by Ferris & Co., of Bristol, is obtained from herring-brine, and is a 20 per cent. solution. It may be prescribed in the form of mixture. My formula is this: ℞. Trimethylamine ♏ iv. vel. viij. ♏; syrupi zingiberis ʒ j; aquæ menthæ piperitæ ℥ j. Misce. Talis fiat modus secundâ, quâque horâ sumendus. And, as supporting the probability of variation in composition, I have at different times found that the same results were obtained with a dose of two minims as with a dose of eight minims. Now, I give always four to eight minims, at first every hour or two hours, increasing the interval as the pains diminish and the case progresses. When all pain is gone, I cease to give the remedy, and substitute, in most cases, quinine. Rarely have I to re-exhibit the trimethylamine, but I do so if pains recur. In the case of a coachman, aged 50, who was suffering from his seventh attack of gout, two minims of trimethylamine were given every four hours. The pains ceased suddenly forty hours after the first dose, and he made a rapid recovery. (Dr. W. H. Spencer. p. 46.)

Scarlatina.—*The Wet Sheet.*—By "the wet sheet" is not meant a cold wet sheet, but a hot one. This useful remedy affords the best external means for eliminating scarlatinal poison, and preventing destructive sequelæ. It promptly suppresses pyrexial heat and itching; produces sleep, with a soft secretive skin, more or less continuously; and enables the digestive organs to accomplish that great desideratum in the treatment of scarlatina—viz., absorption of highly nutritious food. It may be repeated, on the recurrence of the febrile paroxysm, two, three, or four times in twenty-four hours, the patient remaining enveloped from half an hour to an hour. Mothers and nurses who have witnessed its efficacy are most earnest in its repetition. My plan of procedure is to immerse a nightgown, slit up at the front, in hot water (half a pint to a pint), pure, or medicated with a drachm or two drachms of tincture of capsicum, or in the infusion of three or four pods; or in mustard-water, the clear supernatant fluid from a tablespoonful of mustard to a pint of water; extending the gown over the feet by means of a towel immersed in the same fluid, both to be well wrung out, and suddenly applied, and the patient quickly packed in two blankets previously placed on the adjoining sofa or bed; another blanket, or two pillows, or an eider-down quilt covering all. The medicated packing is preferable in the incipiency, and at any other time to evoke the rash, and in cases of cerebral oppression, with pale skin, low pulse, and delirium. (Mr. J. Taylor, p. 34.)

SMALL-POX OWING TO THE GROWTH OF A FUNGUS.—Dr. Klein has made the interesting discovery that sheep-pox is owing to the growth of a fungus in the skin, and although a similar fact has not been demonstrated in the case of small-pox, yet the similarity of the two diseases renders a similar cause probable. In sheep-pox organisms of a distinctly vegetable nature, such as granules which proliferate and form necklaces, are found in the lymphatics about the third or fourth day. When the pock reaches the vesicular stage the vesicles are found to contain masses like those in the lymphatics, but with thinner filaments and smaller conidia. (Dr. T. L. Brunton, p. 25.)

The microscopic researches of Dr. Klein prove that typhoid fever really depends upon the presence of a fungus. His observations show that a vigorous absorption of peculiar organisms, which are really fungi, takes place in the intestine over and around Peyer's patches, and that these pass into the lymphatics and veins of the mucous membrane. (Dr. T. L. Brunton, p. 25.)

Antiseptic Treatment.—There can be no question as to the great advantage to be derived from the use of cold in reducing the heat of typhoid fever; and there can be but little question as to the dependence of the disease upon the growth of minute organisms, the nidus of which is the small intestines. If, whilst we avail ourselves of the advantages we obtain from the employment of cold we administer at the same time internally substances which arrest the growth or destroy the vitality of morbid germs, we shall then not only force the disease to run a favourable course, but also considerably shorten its duration. The subchloride of mercury and iodine are both powerful antiseptics. In typhoid fever this property of theirs can alone account for their special action, and for the early subsidence of the disease. Other antiseptics, such as the sulphate of quinine, dilute sulphuric acid, the chloride of aluminium, &c., find a suitable employment in typhoid fever, as they combine antiseptic and tonic properties. When in practice we apply these rational views, we find that typhoid fever is the most manageable of diseases. (Dr. H. Blanc, p. 31.)

"*Cold.*"—It is highly desirable that the members of our profession should be more generally impressed than they are at present, with the usefulness of the various modes of applying cold to the surface of the body in febrile cases, under certain circumstances; and that they should be prepared without hesitation to carry one or other of them out efficiently whenever this plan of treatment is indicated. This applies to typhoid in common with other fevers. On the other hand, to adopt a routine hydropathic treatment of any fever seems to me most objectionable. The cases in which the more severe methods of applying cold are indicated are those in which the temperature is already very high and remains so, or shows a tendency to rise rapidly, especially if at the same time there are signs of much nervous disturbance. Unquestionably this plan of treatment is not resorted to under these circumstances nearly so frequently as it ought to be. It is difficult to lay down any exact rule as to what temperature indicates the necessity for adopting it, but if it reaches to 106° F. and shows no tendency to fall, or, still more, if it continues to rise, this treatment deserves due consideration. Necessarily much will depend on the actual condition of the patient, and every case must be thoroughly considered in all its features. The best method seems to me decidedly that of placing the patient in a tepid bath, and gradually cooling this. (Dr. F. T. Roberts, p. 29.)

Cold Water.—Dr. Brand (of Stettin) treats typhoid fever by maintaining the temperature of the body below fever heat. This treatment is based on the theory of fermentation. At the beginning of the disease—end of the first or beginning of the second week—the patient is placed up to his neck in a bath at the temperature of 68° F., and at once cold water (43° to 47° F.) is poured over his head. An important point, specially when cerebral symptoms are present. The following days, when doubtless the nervous system will be less excited, water at the temperature of the bath will suffice for the douche. The douche should be continued during a couple of minutes, the assistant will afterwards rub and shampoo under the water the limbs of the patient during some three or four minutes. The patient is then to be left quiet. By that time a transformation can already be observed in him. He was, perhaps, unconscious when placed in the bath; he now begins to complain, the tongue gets moist, the face assumes a more natural appearance, and the previous drowsy, stupid look gives way to an expression of astonishment and fear. After the patient has been some eight minutes in the bath, he is seized with a violent rigor; the teeth chatter, he pants for breath, and violent and repeated fits of coughing are followed by the expectoration of thick bronchial mucus. Frequently there is an involuntary stool. The patient by this time feels anxious, and endeavours to get out of the bath, but the physician must here more than ever remember Dr. Brand's aphorism: "The patient will shiver and chatter his teeth, but he must remain fifteen minutes in the bath." If the rigor appears early, the bath should last only fifteen minutes, and somewhat longer should the shivering appear later. Before removing the patient from the bath, the head-douche should be repeated. Taken out of the bath the patient can stand supported by the assistant. He is trembling with cold, his skin marbled, shaking like a leaf beaten by a strong wind. He is at once carried to his bed, and his shirt should be put on without previously wiping him. A woollen blanket has been prepared to wrap up his feet, the mattress and pillow should be sufficiently hard as not to be depressed by the weight of the body. A single sheet should be thrown over him in summer, a light blanket in winter. Next a cupful of tepid broth should be given to him, followed by a mouthful of good old wine. He is then to be left perfectly quiet. The shivering will last from twenty minutes to nearly an hour. The cold baths are repeated about every third hour, day and night, until the temperature in the rectum measures only 101° Fahr. The patient's diet should be served tepid, and consist of milk, tea and milk, mutton and beef broth. Every half-hour he should drink a mouthful of iced-water, and where much prostration is present he should be allowed a little good wine before each bath. Cold-water enemas are also administered in some cases. The average mortality of six German physicians, who have thoroughly tried Brand's method, was seven per cent. only, whilst their previous experience of the disease had exhibited an average of twenty-three per cent. Up to 1868 Brand himself had treated 170 patients by cold baths and obtained 170 cures, and in the year 1870-71, he had 89 cases and 89 cures. (Dr. Brand, Dr. H. Blanc, p. 31.)

Digitalis.—Digitalis is of great use in the treatment of typhoid fever. It always produces a lowering of the temperature, either complete defervescence or remission. The first effect of digitalis on the temperature shows itself two days after administration, the lowest temperature is obtained on the following day, sometimes only on the fourth day after its administration. The lowering is generally progressive; sometimes it terminates by a more rapid fall. In some cases, there is a very rapid fall in the interval between two thermometric observations, from the evening to the morning, or from the morning to the evening. During the action of the digitalis, the temperature may rise again in the evening, often it is equal, or inferior to that of the morning. Defervescence, or the greatest remission, may occur in the evening. This defervescence, or greatest remission, lasts from a few hours to three days, the temperature then rises. In about two-thirds of the cases, it no longer rises to the same height as before the administration of the digitalis. The action of digitalis on the thermometric evolution of typhoid fever may be thus expressed: the temperature is lowered. Taking into account the descent, the minimum, and the reascent, it may be said that the duration of the influence on the temperature varies from three to twelve days, the average being seven days. These characteristics are explained by increase of tension and arterial tonicity. (Dr. Bernheim, p. 28.)

Diarrhœa of Typhoid Fever.—The use of astringents, especially opiate injections, to arrest the diarrhœa of typhoid is not successful in practice, as distension of the bowels with gases and putrid contents results, and the risk of fatal perforation is increased. As a rule no medicines of any kind are required in typhoid fever except an occasional dose of chloral to procure sleep, and a tonic during convalescence. The patient should be fed mainly with milk, with the addition of beef-tea and two raw-eggs in the twenty-four hours, and wine or brandy should be given in quantities varying according to the urgency of the symptoms of exhaustion, especially in the advanced stages of the disease; but in many of the milder cases, and especially in the case of children, no alcoholic stimulants are required from the beginning to the end of the case. (Dr. G. Johnson, p. 27.)

TYPHUS AND OTHER FEVERS.—*Digitalis.*—The following conclusions have been arrived at as the result of the use of digitalis as a heart stimulant, and a comparison of its effects with those of alcohol. 1. That in the treatment of fever, typhus and other forms, too much reliance has been placed on *alcoholic* stimulants, and that fashion, rather than reason, has swayed many in their *indiscriminate* employment. 2. That the per-centage of cases requiring such stimulants is a low one, and that while our administration of them, as regards quantity and kind, must depend entirely on the condition of the *patient*, still the utmost caution (with our present knowledge of their physiological action) is required. 3. That in digitalis we have a powerful cardiac stimulant, which, while it gives force to the heart, does not do so at the expense of the system, but rather as a conservative agent, which controls expenditure and limits waste of vital action—always, of course, remembering that a large number of cases will recover without any specific treatment, save that care and guidance which provides for the wants of the system, and secures the patient from the risks of complications. That digitalis appears to be indicated in the early periods of many cases of typhus in which we have a rapid pulse and high temperature range, regulating our administration, by its effects on both, using it, rather, with the object of guiding the patient up to a certain point, than of curing the disease. (Dr. H. Macnaughton Jones, p. 21.)

AFFECTIONS OF THE NERVOUS SYSTEM.

OPIUM POISONING.—*Green Tea as an Antidote.*—A woman had taken fourteen drachms of Battley's sedative solution of opium in seven hours to procure relief from agonising pain. The following was the condition she was found in: Coma perfect; pupil contracted to a pin's point; perfectly cold up to the hips and elbows; face drawn and cadaverous; pulse imperceptible; *respiration two in three minutes.* This state of things is verified by one of my colleagues, who considered the case hopeless, and allowed me to administer what I pleased, saying she had not ten minutes to live. In the meantime, I had prepared the strongest possible infusion of green tea, and shortly after twelve I administered, *per rectum*, half-a-pint, my friend and I watching the result. In twenty-five minutes, the pulse at the wrist became perceptible; the face was less pale; and she *breathed six times in a minute*, instead of twice in three minutes. The same quantity of tea was then given, also by injection; and, to make a long story short, at 4 a.m., four hours after the commencement of the attack, she addressed me by name, saying, "she could not see me, but that she recognised my voice;" at 8 a.m., she was out of danger. I have since had three cases of poisoning by alcohol in children, aged one year, five years, and six years. In the two latter, the coma was complete, but all were restored to consciousness in an hour or less. (Dr. J. Hughes Bennett, p. 210.)

POISONING BY STRYCHNIA.—In a case of poisoning by strychnia, in which it seemed evident that poison sufficient to cause death had already been absorbed, thirty grains of chloral were administered by the mouth. In a few minutes an hypodermic injection of other thirty grains was given, and almost immediately afterwards a decided change for the better was observed. Some time afterwards this had to be repeated, as the fits again began to increase in frequency. (Dr. Ogilvie Will, Edin. Med. Journ., April, p. 907.)

TIC DOULOUREUX.—*Calabar Bean.*—Believing that in tic the blood-vessels of the part affected are in a state of contraction, I have made use of the bean in several cases with exceedingly satisfactory results. The best plan of using the remedy is to introduce two drops of a solution of the extract (1 in 40) into the eye on the same side as the pain. The action of the Calabar bean being purely local renders it preferable to that of croton chloral, which, however, may be subsequently tried if necessary. I am quite hopeful that anyone giving Calabar bean a fair trial will find it a useful and safe immediate remedy for tic, leaving time, in cases requiring such treatment, for the use of quinine and iron, or other medicines calculated to have a permanent effect. For my own use, I intend to obtain, if possible, stronger gelatine squares, that being, in my opinion, the most convenient mode of application, being easily applied and certain in action. The idea is a very ingenious one, and does great credit to the inventor. (Dr. W. Munro, p. 55.)

TOOTHACHE.—Let the patient hold in the mouth a little solution of bicarbonate of soda. No explanation can be given of its action; but in the case related immediate relief was given. (Dr. D. Duckworth, p. 57.)

AFFECTIONS OF THE CIRCULATORY SYSTEM.

HEMORRHAGES.—*Hypodermic Injection of Ergotin.*—Pure ergotin, when kept covered in a porcelain pot, will keep for any length of time; but when liquefied with water it soon loses its active properties and becomes inert. Three grains is the proper dose to inject, and this amount can be readily dissolved in ten minims of warm water. Badly and carelessly prepared ergotin is liable to do harm when administered hypodermically. Ergot has long had the reputation of being a styptic, and if its physiological action of inducing contraction in the involuntary or non-striped muscular fibre was more generally known and acted upon, its sphere of usefulness would be very greatly extended. A man twenty-eight years of age, had suffered from repeated attacks of epistaxis. On two occasions his posterior nares had been plugged, but with little benefit. The day he presented himself at the Infirmary the hemorrhage was copious, apparently coming from both nostrils, and he had then been bleeding for half an hour. I injected five grains of ergotin dissolved in twenty-five minims of water into his forearm; in less than four minutes hemorrhage had entirely ceased. In two cases of hæmoptysis four and five grains were respectively injected with the effect of completely and permanently arresting it. (Dr. W. J. Cleaver, p. 214.)

NÆVUS.—*Electrolysis.*—For the treatment of nævus, by electrolysis, I use Stöhrer's and Meyer and Meltzer's continuous batteries, and judge according to the size of the nævus how many cells to use—six or eight is about the average if the battery is in good working order. If the nævus is small I use one or two needles attached to the negative pole, and one to the positive, and pass them into the tumour; but if large, I put on several needles in the negative cord, and use charcoal point with the positive. After the needles have been in the tumour a short time decomposition begins to take place; this is shown by bubbles of gas passing by the side of the needles. A clot is then formed, the tumour turns of a bluish white, and in this clot fibrous degeneration takes place, and ultimate cure is the result. The advantages of the galvanism are its certainty of action, its safety, the faintness of the cicatrix, and the cessation of pain directly the operation is over. I have used every other method, and I certainly think this by far the best. (Mr. S. J. Knott, p. 123.)

POPLITEAL ANEURISM.—Those are the most promising cases for the success of the compression treatment in which the symptoms are not urgent or rapidly advancing, in which there is a strong sac and a certain amount of fibrine already deposited, and where the character of the bruit and of the pulsation points to the conclusion that the aneurism is not fusiform. And in cases where the presence of other general complications renders the surgeon anxious to avoid the risks attending a serious operation, we know that compression has very often succeeded. Pressure does sometimes succeed after prolonged perseverance, but usually, I believe, it fails ultimately when during the first few days it has not, at least so far, succeeded as to ameliorate the patient's condition, to diminish the size of the tumour and the strength of its pulsations, and produce some enlargement of the collateral vessels. The evidence up to the present time leads to the conclusion that a patient is not more but less likely to recover from ligature of the femoral if a prolonged application of pressure has previously been made. The general conclusion would be that it is better, after a careful but very moderate trial of the compression treatment, to abandon it, if it does not seem to be doing good, and to resort to the ligature before the patient's chance of recovery from that operation has been permanently impaired. (Prof. T. Holmes, p. 116.) We have in the Hunterian operation a method which almost always succeeds, if the patient recovers from the operation; and which may be expected confidently to be followed by recovery in the very large majority of cases, especially if the dissection be skilfully and carefully conducted, so as to avoid all violence to the vein and all unnecessary exposure or contusion of the artery.

As far as they are to be learnt from our table, the results of the compression treatment of popliteal aneurisms may be thus expressed:—Compression was tried in 66 cases with success, and in 58 cases without success. Of these latter, the artery was afterwards tied in 44; amputation was practised in 8. Death occurred in one case. In four cases there is no evidence of any subsequent treatment, though in one of them, which occurred at St. George's Hospital, it is believed that the femoral artery was afterwards tied with success at St. Bartholomew's. Finally, one case is left in which the aneurism had recurred after apparently successful ligature. Pressure in all its forms was now tried and failed; but manipulation seemed to produce consolidation, at any rate for the time. It seems certainly at first sight a discouraging fact that pressure should have failed 58 out of 124 times—that is about as often as it succeeded. But I am not prepared to admit that this result furnishes any valid argument against the treatment. Seeing that pressure may cure, and is unattended with risk, it certainly ought to be tried before ligature of the artery is determined upon, for the patient is placed in no worse position thereby even if it does not succeed. However favourably the operation of ligature of the femoral artery may proceed, it must always involve considerable danger. (Prof. T. Holmes, p. 118.)

POPLITEAL ARTERIO-VENOUS ANEURISM.—In a case of this kind the author tied both the artery and vein with success. The result of the operation tends to prove that surgeons have taken a too serious view of the risks likely to follow the ligature or obstruction of the principal artery and vein of a limb. One principle in all former operations for the relief of arterio-venous aneurism has been to avoid any interference with the vein, but this case has now practically demonstrated that both artery and vein may be successfully ligatured. Should carefully-applied compression fail to relieve an arterio-venous aneurism, recent experience inclines him to advocate the operation performed in the present instance, provided the case be one otherwise suitable for an operation. The advantages of this plan are, (1) certain closure of the openings of communication in both artery and vein; (2) absence of any risk from venous hemorrhage or absorption in connexion with the wounded vein; (3) its practicability in the large majority of cases; (4) its easy performance without much dissection. By the employment of the antiseptic treatment, all local irritation in connection with the sac and wound was prevented, and suppuration was limited to the single discharge of a few drops of innocent pus. (Mr. T. Annandale, p. 120.)

Tapping the Pericardium.—In cases of pericarditis with great effusion, failure of pulse, and rapid respiration, the pericardium may be tapped with great advantage. An aspirator needle, the aspirator being exhausted, is to be passed in the intercostal space between the fourth and fifth ribs, two inches to the left of the central line of the sternum. Directly the pericardium is penetrated, as shown by fluid freely passing into the aspirator, the point of the needle is to be pressed up against the chest wall as closely as possible. In a case which is related in detail, the fluid flowed freely to 14 ounces. (Mr. T. H. Bartleet, p. 58.)

Varicose Veins.—*New Operation.*—In a case of large tortuous veins below the knee, after standing for half an hour with a carbolised cloth round the left leg, the patient was put under chloroform, and I then marked on the skin with ink the course of the tortuous vein below the left knee for about nine inches. At each end of this mark I ligatured the vein by means of a pin passed under the vein, with a piece of bougie and a figure-of-8 suture over the vein; two other similar ligatures were placed above the upper one at distances of two inches apart, and a fifth ligature was placed two inches below the lower one. The pins, bougie, and threads had all been previously carbolised. Esmarch's elastic bandage was then applied to the whole limb, with the effect of completely emptying the varicose vein, even in the intervals between the several pins. I then made a straight incision through the skin from the top to the bottom of my tortuous ink-mark, and, with a director and knife, slit up the vein along the whole of the exposed portion. As the vein then formed a very large, irregular, folded mass at the bottom of the wound, I passed a ligature round it above and below, and *removed it entirely* with forceps and scissors, cutting through two large veins opening into it. A strip of carbolised gauze was then placed in the wound, and the limb put up in the complete antiseptic dressing. The operation was done under the carbolised spray. I may here observe that there was *no bleeding whatever* during the operation. (Mr. J. Marshall, p. 125.)

AFFECTIONS OF THE RESPIRATORY SYSTEM.

Bronchitis.—*Digitalis.*—Given a patient past the meridian of life, either very stout, or emaciated from previous bad health, and let him, or more commonly her, have a neglected bronchitis, and we have the following class of symptoms produced: A perspiring skin, a poor and quick pulse, urgent dyspnœa, bluish tinge of lips and skin, and respiration accompanied by loud wheezing sounds. The most successful plan of treating these cases, so common during the severe winter, is the free administration of digitalis, which may be advantageously combined with the compound spirit of ammonia. The digitalis may be given in doses of ten minims of the tincture every two hours. In less urgent cases, the pills recommended by Dr. Fothergill, in his

Hastings prize essay, are very useful, and have the advantage of less easily inducing sickness than the tincture. In these cases, it is the heart which is at fault, the right ventricle being gorged with blood, which it is unable to propel through the lungs. The best test of the truth of this theory is its success, for the pulse will be found to become full and slow, and the breathing relieved, directly the digitalis has had time to act on the heart. Its action is sometimes assisted by the judicious administration of a little alcohol. I prefer common gin. If, however, it be found that these cases of commonly called bronchitis are really dependent, for their non-recovery at least, upon weak hearts, care must be taken, as to the administration of stimulants, for they accelerate the action of the heart, and in the end weaken it. In fact, digitalis slackens the speed, and stimulants increase it, so they to some extent contradict each other. (Dr. J. Braithwaite, p. 61.)

BRONCHOCELE.—*Division of the Isthmus to relieve Dyspnœa.*—When the isthmus of the thyroid gland is enlarged, there is often dangerous dyspnœa. The hypertrophied part becomes firmly adherent to the trachea and the lateral lobes extend around it. In a case of this kind, in which no relief could be otherwise obtained, after chloroform had been given, an incision was made through the integuments in the median line over the trachea, about two inches long, the superficial fascia and then the deep were divided on a director, and, finally, the surface of the tumour was exposed, which in size approached that of a flattened walnut. The isthmus on either side of this was more slender and smaller in bulk than the tumour, which permitted of a strong ligature being placed on either side of it with the aid of an aneurism needle. The isthmus was then freed to the inner side of each ligature, divided, and wholly removed, the trachea being observed to be quite free. The patient soon left the hospital, feeling no inconvenience about the trachea on breathing or swallowing. (Sir G. Duncan Gibb, p. 128.)

CHRONIC WINTER COUGH.—*Iodide of Potassium.*—The one distinct and indisputable action of iodide of potassium which I have noticed is that of *stimulating the mucous membranes;* thereby influencing their action and promoting their secretions. In a person suffering from an attack of chronic winter cough, the first symptoms are great difficulty in breathing, amounting to a sense of suffocation; hard, dry, racking cough, which the patient says he cannot subdue; while he expresses a belief that relief would be obtained if something could be brought up. The suffocation complained of has been attributed to a swollen state of the air-passages, obstructing the respiration: but there is a fair probability that the dry congested condition of the membranes is unfavourable to the interchange of gases requisite for blood-aëration, and the situation of the patient such that, however he may fill his lungs, his sufferings remain unrelieved. Whatever the actual state of matters at this point, certain it is, that as soon as expectoration sets in, the breathing is improved; and although the disease has by no means gone, the patient is so far better. Many hours of severe suffering may be obviated by taking advantage of the power of iodide of potassium to restore and promote the secretion of the bronchial membranes, thereby greatly relieving the congested blood vessels, producing comparative tranquillity of breathing, and getting the patient over the first stage of the disease much sooner than he otherwise would. (Dr. J. Lawrie, p. 208.)

DIPHTHERIA.—When a case of diphtheria occurs in a house without evidence of importation from without, still more when several cases occur together or in quick succession, there will be good reason to suspect that sewers, cesspools, or contaminated water may be the source of the disease. My belief is that in a very large proportion of cases there is as close a relation between diphtheria and insanitary conditions as exists between typhoid fever and similar insanitary conditions; and I scarcely need say that if this be so the general recognition of the fact is of the greatest importance with reference to the adoption of preventive measures. There is reason to believe that much more harm would result from ignorance of the filthy origin of diphtheria than from practically ignoring its infectiousness. Many instances have come to my knowledge in which fetid fæcal emanations have appeared to be the direct cause of diphtheria. It is notorious that in the houses of some of the most exalted and wealthy, and in open country districts, the sanitary defects which originate such diseases as diphtheria and typhoid fever are almost as common as in the meanest cottages and in the most crowded cities. (Dr. G. Johnson, p. 38.)

During an extensive epidemic of this disease which occurred at Aylsham, in 1868, the local treatment I adopted in every case was the application of tincture of iodine (forty-eight grains to one ounce) to every part of the throat covered with membrane at least once in twenty-four hours, and the inhalation of iodine vapour mixed with steam, but more especially the latter, if the larnyx were invaded. If the membrane were firm in texture, and not too strongly adherent, I always removed it and applied the tincture of iodine to the denuded surface. and with the best results; for, although frequently the membrane would re-form, yet it never regained its pristine condition. If the membrane were in specks or shreds, I applied the iodine over them, and in general half-a-dozen applications were all that was required to procure their dismissal, and in several instances two applications were sufficient. The general treatment was supporting and stimulating throughout. A liberal supply of beef-tea, wine, and milk was frequently and regularly given, to maintain the system against the natural tendency to depression and exhaustion. In medicine I rely upon chlorate of potash and tincture of steel, from three to five grains of the former with five to fifteen minims of the latter every four hours, according to age. When tracheal symptoms arise, I at once have recourse to the inhaler, beginning with ten drops, increasing to a drachm of the common tincture of iodine to a point of boiling water, and letting the patient inhale as frequently as possible. In using this, one precaution is necessary, and that is not to begin with too large a supply of iodine, otherwise it is too irritating, causing the patient to cough, and making him unwilling to use it. I have found ten drops well borne to begin with; and, after a short time, we may gradually increase the quantity to a drachm to the pint without inconvenience. (Mr. T. Prangley, p. 41.)

AFFECTIONS OF THE DIGESTIVE SYSTEM.

Exploration of the Abdominal Cavity in Extreme Cases of Obstruction of the Bowels.—It is probable that further experience will teach us that we may use great freedom in dealing surgically with the peritoneum, in cases in which the patient has hitherto been abandoned to his fate. Ovariotomy has taught us that a peritoneum altered by recent or remote inflammation can bear exposure, handling, and cleansing, in a manner truly astonishing. In cases of strangulated hernia, how frequently is not the healthy peritoneal cavity opened and explored with impunity ; several inches and even coils of intestine being handled and sponged, and returned into the abdominal cavity. In a case of obstruction of the bowel which promised to terminate fatally, and in which the seat of obstruction was merely surmised, the abdominal cavity was opened by an incision five inches in length, made in the middle line below the umbilicus. The seat of obstruction was ascertained, and left lumbar colotomy was performed with complete relief, as the disease of the bowel could not be removed, being a hard mass firmly attached to it, and obstructing its calibre. The patient made a rapid recovery. (Mr. T. P. Teale, p. 61.)

Fissure of the Anus.—Our surgical treatment acts just in this way—viz., by putting the parts at rest. This is accomplished by either of two methods : over-distending the sphincter, paralysing it for a time by means of the fingers, or dividing the muscle with the knife. Over-distension is now perhaps more frequently done in this city, certainly in this hospital. When you use the fingers, which I think are far better than an instrument, you place your two thumbs well into the rectum, so as to include the whole of the sphincter, and then grasping the buttocks with the fingers, you forcibly distend the sphincter as you bring the thumbs against the tuberosity of the ischium. This, at first sight, may appear a very rough and harsh mode of operating, and is so regarded by some, who, I believe, for this reason denounce it; and again, because it has been said to give rise to undue laceration of the tissues and troublesome hemorrhage. I have resorted to this means a great number of times, and have never seen any but good results follow. When we use the knife, we draw the blade through the centre of the ulcer or fissure, so as to divide the mucous membrane and some or all the underlying muscular fibre of the sphincter. Whether to divide all or only a portion of the muscle is a disputed point. That a superficial incision will suffice, in many cases, in relieving pain and curing the disease, I know from personal experience; and it does so just in the same way that a caustic may act, viz., in dividing an irritable or inflamed nerve. Should you desire to be more certain of the result of the operation, a free incision of the muscle, thus securing a longer period of rest to the parts, is best, and by many this is always made. (Dr. Erskine Mason, New York, p. 130.)

HERNIA.—In a case of large congenital inguinal hernia in a boy eight years of age, I made an incision an inch and a half long, parallel to and between the pillars of the external ring, and dissected down carefully till the pillars were clearly exposed. I endeavoured to roughen their edges by scraping them with the scalpel, and then introduced two catgut sutures at a fair distance from the margins, laying the needle flat against the inner surface of the tendinous tissue to avoid wounding the peritoneum (both rings being drawn close together, owing to the long duration of the hernia), and tied these ligatures firmly, leaving room for the spermatic cord, cut the ends off close, and then united the skin with the same material and applied the carbolised dressing. The whole operation was performed under the carbolic acid spray. No bad symptoms followed, the deep parts united firmly, the superficial granulated. The case appeared to be permanently cured for six months, when owing to some unusual exertion, the hernia suddenly redescended. The operation having been so successful, was repeated, three sutures being introduced instead of two, the cord having left a less free channel. When the external wound was quite well, a truss with a flat indiarubber pad was applied. At the present time, a year after the second operation, and the truss not having been worn for 24 hours, no impulse can be felt, and the deep union appears firm and complete. (Mr. C. Steele, p. 132.)

Strangulated Hernia.—Mr. Adams relates a case of strangulated femoral hernia, which he succeeded in reducing by large injections of oils, after complete strangulation for more than three days. He recommends the injection of two quarts of olive-oil, three ounces of castor-oil, and three ounces of turpentine mixed together, and this may require to be repeated. The injection is to be slowly performed, and a long gum-elastic tube about nine or ten inches in length is to be used. (Mr. W. Adams, p. 133.)

Aspiration.—It becomes a very serious question indeed, whether any surgeon is warranted as a rule in performing the old operation for hernia, before having tried the simpler and safer plan of aspiration. The one, if not sufficient, does not preclude the use of the other. Even the warmest advocates of aspiration in hernia do not pretend that it is of universal applicability. Its use will not tend to the reduction of a strangulated epiplocele, but can we always be certain with what we are dealing in such circumstances? Better give the patient the benefit of the doubt, and then operate in the usual manner if there is no reduction. Neither will it suffice *per se* to reduce herniæ complicated by bands of adhesion; but its use will, by reducing the size of the gut protruded, make the ulterior cutting operation easier. In a very small hernial knuckle, such as is not unfrequently found in the femoral region, little will be achieved by aspiration. (Dr. J. P. Bramwell, p. 135.)

Distinction between Strangulated and Incarcerated Hernia.—A sharp line of distinction cannot be drawn, but tact, attention, and practice, will enable us soon to settle approximately the symptoms which should decide us on either proceeding promptly to operation, or adopting other courses with a view to promoting the return of the hernia. I would say that, if the patient be young and healthy, the hernia recent, small, tense, and painful to the touch, with the abdomen hard, and either retracted or distended and tympanitic, prompt operation is the safest remedy. But in the aged—when the hernia is large and of long standing—when, if a truss has not been worn, the parts have had time to accommodate themselves to the abnormal state, or, when a truss being worn, a large mass suddenly protrudes ; when handling gives but little pain or suffering—in such, I think, other remedial measures may have fair trial. The warm bath, if convenient, or, what I prefer, large hot fomentations, and a moderate trial of the taxis, preceded by a large dose of opium—I prefer this to either chloroform or tobacco. (Mr. J. W. Martin, p. 137.)

AFFECTIONS OF THE URINARY SYSTEM.

Advanced Prostatic Disease.—*New Operation.*—If anything can be done for the relief of patients suffering from advanced prostatic disease it is worth trying, even if some risk is incurred. I propose in these circumstances a proceeding similar to that which we employ in the trachea when death is imminent for want of air—viz., the introduction of a tube beyond the seat of obstruction—one which is to be permanently retained there as the constant channel for urine, just as the tracheotomy tube has been for many a patient the only channel during years for air to the lungs. In other words, I propose to puncture the bladder above, or rather behind the pubes. The proceeding which I have practised differs from ordinary puncture, and more resembles the high operation for stone, being rather a compound of the two. The operation, which I have now performed three times, consists in passing a large sound, hollow throughout, with a strongly marked curve; that represented at A in the figure (page 210), I have found as good as any, but it may be modified somewhat, according to the case, and closed by a bulbous-ended stylet (B). The instrument is introduced by the urethra until the end can be felt just behind the symphysis pubis. It is then confided to an assistant to retain in its place. The operator now makes an incision not more than three-quarters of an inch in length, less if the patient is not stout, enough to admit the index finger tightly (since a large opening becomes embarrassing subsequently), in the median line at the upper margin of the symphysis. The tissues are separated by the finger, and the linea alba being next slightly divided by the point of a bistoury, the finger is passed down closely behind the symphysis, and when the end of the sound is clearly felt, a little opening is made so as to expose its point. The operator now, taking the handle of the sound in his left hand, makes the end protrude in the wound, the bulbous stylet is withdrawn, and he passes the tube C in its whole length into the hollow channel of the sound. He now withdraws this completely by the urethra, and in doing so necessarily ensures the passage of the elastic tube into the bladder. The path of safety is to make a very small opening directly above the symphysis, then to find the way close behind it to the end of the sound there, and incise only just enough to allow this to be pushed up into view. The insertion of the tube into the hollow of the sound, and the withdrawal of the latter, as already stated, brings the tube into its place. But it may be remarked that the urine may not at first flow through it, for the withdrawal of the sound may carry the tube, not only into the bladder, but, when this is empty or very contracted, even through it into the prostatic urethra. If so, the tube has only to be withdrawn a little and the urine flows. Indeed I have found that the tube is usually improved, especially in the subsequent progress of the case, by being a little shortened. It is then to be fastened securely with tapes and plaster, and to be worn a few days in bed until the parts are consolidated, and the patient can move about with safety. If the tube escapes during the first two or three days it may not be easy to replace it, but when the passage is established it may be removed and replaced easily enough. A very important injunction is to make the wound as small as possible so as to be nearly filled by the tube. A large wound is more painful and is constantly traversed by the urine. (Sir Henry Thompson, p. 149.)

AMMONIACAL CYSTITIS.—*Benzoic Acid.*—Cystitis is caused by ammonical urine. If we can saturate the carbonate of ammonia of the urine without employing substances which may form insoluble salts, such neutralisation will serve as a powerful adjuvant to the treatment ordinarily employed in diseases of the urinary organs. To all acids except one there is some objection. Benzoic acid, formerly recommended by Dr. A. Ure, is the only one which meets the contingency. This is rapidly transformed into hippuric acid, and exerts no ill effect upon the economy, persons both in health and ill being able to take from two to six grammes per diem without detriment. Hippuric acid, thus formed, increases the acidity of normal urine, and in ammoniacal urine prevents the formation of phosphatic deposits by combining with the ammonia, which without it would have formed with the phosphate of magnesia contained in the urine an insoluble ammoniaco-magnesian phosphate. The hippurates in general, and especially the hippurate of ammonia. are very soluble. Benzoic acid is very slightly soluble in cold water, which constitutes one of the difficulties of its employment; but it may be given in suspension in mucilaginous or syrupy mixtures. A formula is—Benzoic acid 1 to 3 parts; neutral glycerine, 4 to 6 parts; and mucilaginous mixture, 150 parts. As a general rule, only one gramme (fifteen grains) per diem should be given at first, this quantity being rapidly increased to three or four grammes. To many patients as much as six grammes may be given, providing this quantity be not persisted in for too long a time, as indicated by dryness and a sense of smarting in the pharynx. The production of acidity or neutralisation of the urine does not take place at once, the extreme limits of time which have been observed being from five to nineteen days, the mean period being from seven to eight days. This effect is announced by the diminution of phosphatic deposits, pus, and blood, and by a modification in the odour of the urine, the fetidity of which is gradually lost. MM. Gosselin and Robin, p. 68.)

COPAIBA AS A DIURETIC.—Copaiba is a diuretic of considerable value. In a case of ascites the patient was ordered to take three capsules night and morning. Three days afterwards the urine was found to have increased from 14½ to 65 oz. in twenty-four hours. The ascites rapidly diminished until in six days no fluid could be detected. The vertical dulness of the liver was 6 inches. (Dr. E. L. Dixon, p. 216.)

DIABETES.—*Glycerine.*—Diabetic patients lose a great deal of sugar, which in a state of health would be changed into carbonic acid and water. A great deal of respiratory heat is thus lost, and the patients must therefore use adipose matter and protein compounds for breathing purposes. To save the protein matters glycerine is administered, since it has been shown by physiologists that it cannot be transformed into sugar within the economy, but is ultimately changed into carbonic acid and water. Thus respiration is supplied, and no tissues actually wasted. It is stated in the Mouv. Méd. of Jan. 23rd, 1875, that Prof. Schultzen gives in such cases from six to eight drachms of glycerine per diem. The remedy should be continued uninterruptedly for one month, the doses remaining the same, as larger ones are apt to give rise to diarrhœa. (Lancet, Feb. 20, p. 289.)

STONE IN THE BLADDER.—*Dolbeau's Operation.*—The principle of what was known as the old Marian method was "a small incision, much dilatation." This dilatation was however carried out in a faulty manner. This defect is remedied by Dolbeau's plan of operating. The neck of the bladder, even dilated to its extreme limits, will not afford room for the extraction of any but the smallest calculi. Hence the necessity of crushing previous to removing the stone, and the name of "perineal lithotrity" given to the operation. The instruments used are few : a scalpel, a screw dilator, a crushing forceps, and various-sized seizing forceps. The essential feature in the screw dilator is that the blades keep parallel in every stage of their expansion, forming together a cylindrical body, the diameter of which varies with the action of the screw. At rest, the six smooth blades or columns are in apposition, run up to a common point. They conceal two balls, capable of moving up and down along a central stem, and of separating the columns more or less without causing them to diverge. The patient being placed in the usual lithotomy position, the incision, two centimeters in length, is made with the blade upwards, and begins immediately in front of the anus, at the brown zone marking the passage of skin into mucous membrane. A deeper incision opens up the perineal fascia, through which the knife, guided by the left index-finger, is thrust into the membranous pórtion of the urethra. The work of dilatation now begins, and from the amount of care with which it is accomplished depends in a great measure the success of the operation. Four successive dilatations are employed by Professor Dolbeau. The first stretches the external aperture and the subcutaneous tissues. The instrument is next closed, and passed up to the groove of the staff and firmly pressed against it whilst the expanding screw is being turned—a proceeding that causes the whole of the membranous portion to slit up along the line of incision. The instrument can now be pushed one step further along the staff, which the assistant slightly depresses. As soon as the membranous region has sufficiently yielded to this third dilatation, the dilator is closed and pushed onwards into the neck of the bladder, the staff is withdrawn and the screw cautiously turned until expansion is complete. The passage thus formed is of uniform calibre, and has smooth walls. This can be felt by the finger in the dead subject. In the living Professor Dolbeau deprecates the use of digital examination. The stone is now within easy reach, and if very small will be removed by the light forceps used in making the first exploration after removal of the dilator; generally, however, it has to be broken up by the cassepierre. This is introduced without any great difficulty, and, thanks to the broad blunt beak in which it terminates, it obtains an easy grip even of the harder and smoother concretions. Large stones cannot be clasped, but will usually yield to the repeated bites of the instrument. The fragmentation of the stone is often very great; and to extract everything, even with the help of injections, is a task requiring much patience. Before the patient is released from the lithotomy posture, a catheter is always introduced through the natural channel to obtain a crucial proof of the bladder having been cleared. (Dr. W. Ewart, p. 147.)

Stricture of the Urethra.—Gradual dilatation, such as is accomplished by the passing of bougies at regular intervals, is, in my opinion, the most satisfactory method of treating uncomplicated organic stricture, as regards both its safety and the duration of the relief which it affords. In carrying out this method, I must express my strong conviction that the employment of metal bougies is to be preferred to instruments of a softer material. In carrying out gradual dilatation, the instrument should be passed at intervals of two, three, or four days, according to the amount of irritation which follows the proceeding. Holt's, Thompson's, and other methods of immediate dilatation or rupturing the stricture may be employed in very tight strictures, but recontraction follows much sooner than when the gradual dilatation is employed. In cases of organic stricture with constantly recurring spasm or contraction, gradual dilatation has only a very temporary effect, and the operation of internal division is to be preferred. For this purpose, Dr. Gouley's instrument (of New York) is most efficient and satisfactory. Organic stricture complicated with retention of urine, unrelievable by the catheter; obliteration of the urethra; urinary infiltration, abscess, or fistulæ, is most effectually treated by the operation of external division: for it is only in this way that the complications can be got rid of. (Mr. T. Annandale, p. 145.)

Syme's Perineal Section.—When the time arrives for the operation, and everything else has been prepared, it becomes the duty of the surgeon or his assistant, to introduce the Syme's grooved staff, in which it will be remembered one part is made extremely small, equal in the curved portion to a No. 2 or 3 catheter, the shaft of the director being equal to a No. 8 or 10. As soon as the instrument is brought down to the face of the stricture, with the urethra prepared by extreme dilatation, it is wonderful to notice how readily, in most cases, a urethra which ten days previously would not permit in any way the passage of a small catheter will now receive the narrow portion of the director, and we may slip it on through an indurated stricture into that wider portion of the canal which leads to the bladder. (Mr. E. Lund, p. 138.)

AMPUTATIONS, FRACTURES, DISLOCATIONS, AND DISEASES OF BONES AND JOINTS.

Amputations through Joints.—For a long time a very great prejudice existed against amputation at joints, founded chiefly on the recognised danger which attends "wounds" of articulations. The fear was great of exposing cartilage and fibrous tissues to the air, or interfering in any way with these structures. The opinion has prevailed that proper adhesion would not take place between a surface covered with cartilage and the soft parts laid over it; that the suppuration would be rendered far more profuse by the presence of the cartilage, which it was thought must exfoliate before the stump could heal. Those among us, however, who have had much operative experience, and whose attention has been directed to the fact, must have seen many cases in which the incrusting cartilage of a bone has behaved in no such injurious way, but on the contrary, has given no trouble whatever. To constitute a good "method" of amputating the chief requirements evidently are—thoroughly to remove what is destroyed or diseased; to retain as much of the body as possible, *i.e.*, to keep as far as we can from the trunk, and so diminish the risk of the operation; to obtain sufficient covering, and that of a kind which will form a good stump (muscle to cover bone, and skin to cover muscle); to fashion our flaps so that they will readily fall into and retain their place; to provide good drainage; and to place the blood-vessels and nerves, and also the cicatrix, out of the way of pressure. (Dr. G. B. Macleod, p. 72.)

Antiseptic Surgery.—*Recent Improvements.*—It is very convenient to use high-pressure steam as the motive power, on the principle of Siegle's steam inhaler, for the purpose of providing an antiseptic atmosphere in the form of spray, during surgical operations. The water of the condensed steam dilutes the solution with which it becomes blended in forming the spray, so that it is needful to use a larger proportion of the acid. In the machines hitherto constructed one part of water is consumed by ebullition for three parts of solution sucked up to mingle with it, and thus 1 to 30 is the proper porportion of the acid in order to form a 1 to 40 spray. As a dressing for excluding putrefactive fermentation from wounds, the antiseptic gauze, which contains in its fibres carbolic acid stored up in common resin, which is of course insoluble in the discharges and holds the acid with great tenacity, has continued to prove thoroughly trustworthy if properly used. Under ordinary circumstances we still use the gauze in eight layers, with a sheet of some trustworthy impermeable tissue placed beneath the outermost layer to prevent the discharge from soaking directly through the dressing. The most durable and therefore most reliable material for the purpose, consistent with the requisite lightness, is a fine cotton cloth with a thin layer of caoutchouc on one side, known in the shops as hat lining or thinnest mackintosh. The use of gauze is unfortunately restricted by the high price at which it is often sold. By the following plan, however, the wholesale price has been reduced by more than half, at the Royal Infirmary of Edinburgh. First I may remark that the chief element in the cost is the cotton cloth, the expense of the materials with which it is charged being less than a farthing per square yard of the gauze. It is therefore of great importance to obtain the muslin as cheap as possible from the manufacturer, and a little saving is effected by having it unbleached. (Lang and Cousin, 42, Ingram Street, Glasgow, supply the unprepared gauze at the wholesale price of 1¼*d.* per yard.) The materials used for charging the gauze are—1 part of crystallised carbolic acid, 5 parts of common resin, and 7 parts of solid paraffin; the last ingredient being used for the purpose of preventing undue adhesiveness. Paraffin has this advantage compared with any other substance of similar consistence with which I am acquainted, that it does not blend at all with carbolic acid in the cold, and therefore simply dilutes the mixture of acid and resin, without interfering in the least with the tenacity with which the resin holds the acid. For details of the mode of charging the gauze, the reader had better refer to the original article. (Prof. Lister, p. 104.)

There are some circumstances in which oily solutions of carbolic acid are valuable. For lubricating instruments introduced into the bladder, such as catheters, bougies, sounds, or lithotrites, I have for some time past used a solution of one part of carbolic acid in twenty parts of olive oil—a proportion which, while unirritating to the urethra, is trustworthy as an antiseptic; and there can be no doubt that the avoidance of putrefactive fermentation within the bladder is in many cases a matter of vital importance. In using a catheter, the interior of which cannot be kept clean, but must have more or less of foreign material encrusted upon it, some of which might by chance enter the bladder from the regurgitation, the instrument should either be kept for several minutes with the carbolic oil within it before it is passed, or, what is more efficient and saves time, it may be washed out with the 1 to 20 watery solution before being smeared with the oil. The treatment of cases of disease of the bones of the tarsus by the antiseptic plan presents some difficulties, arising from the fact that the sinuses contain putrescent matter. The best plan is to wash the cut surfaces with a solution of chloride of zinc—forty grains to the ounce. Chloride of zinc has this remarkable peculiarity among all antiseptics that I have tried, that a single application of it to a recent wound in a solution of the strength above mentioned, though it produces no visible slough, yet prevents the occurrence of putrefaction in the cut surface for days together, in spite of the access of septic material. (Prof. Lister, p. 108.)

CHRONIC BURSITIS PATELLÆ.—In this disease, with fluid effused within the sac, the usefulness of antiseptic treatment, combined with the insertion of a drainage-tube, is well seen. The skin being washed with 1 to 20 carbolic lotion, a puncture is made under the spray with a tenotomy knife, sufficient for the introduction of a drainage-tube scarcely larger than a crowquill, care being taken that it penetrates fairly into the cavity of the sac, which often lies at a considerable depth in consequence of thickening of the membrane and of surrounding textures. The narrow drainage-tube may be readily inserted by means of a simple modification of the dressing forceps introduced by myself several years ago, but hitherto unpublished. The blades, which are straight, are ground down to the size of a probe at their extremities, so that they can be passed into a very small orifice. This instrument, which goes by the name of sinus-forceps among the Edinburgh instrument-makers, will be found very useful for extracting small exfoliations and for various other purposes. The clear fluid contents being all pressed out of the sac, a gauze dressing is applied, and retained in position with a figure-of-8 bandage. Owing to the subsidence of thickening it may be necessary next day to shorten the drainage-tube. The tube being shortened to the requisite degree, the dressing now applied might be left untouched for a week so far as regards the purpose of ensuring absence of putrefaction; but it will be well to expose the part again in two or three days in order to ascertain whether or not the drainage-tube may be dispensed with; the rule being that it should be continued so long as the serous stain on the gauze is more than the puncture, as distinguished from the interior of the sac, would account for. This is probably the case within a week of the opening of the bursa; and then the drainage-tube being discontinued, and a small piece of protective being interposed between the puncture and the gauze so as to permit cicatrisation, the little sore will be found completely healed in the course of another day or two. At the same time the sac will be free from any fluid accumulation, and the surrounding thickening either quite gone or quickly disappearing.—(Prof. Lister, p. 99.)

DISEASED JOINTS.—Disorganised joints are more amenable to direct local surgical treatment than is generally supposed, and free incisions into joints and the removal of necrosed bone from joints are both excellent and successful operations. Both these measures are far less severe than resection in the bulk of cases, and far less serious than amputation; and in a number of instances they are also most successful. A free cut into a suppurating or disorganised joint, whether associated or not with bone disease, is rarely followed by any other than a good result. When the suppurating process is due to synovial disease, a recovery without further surgical interference may be looked for. When due to local necrosis the incision helps nature towards the recovery of the cases by expediting the process of exfoliation, and the subsequent removal of the bone by either natural processes or some surgical proceeding. And in still more severe cases the incision gives relief, and in no way tends towards inducing any increase in the mischief. (Mr. T. Bryant, p. 84.)

Drainage Tubes in the Treatment of Abscess.—In the case of abscess beside the rectum a bit of lint soaked with carbolic oil is used for a drain, simply because in this situation it is not easy to keep in position a caoutchouc drainage-tube, which, under ordinary circumstances, is greatly to be preferred, since it does not at all obstruct the flow of discharge, and may be carried to any depth that is desired, and can be removed and reintroduced without difficulty. Hence a drainage-tube of comparatively small size introduced through a mere puncture on the skin, or through a small interval between stitches, is more efficient than a free incision or a widely gaping wound without the use of a tube. It is impossible to exaggerate the importance of drainage-tubes. In abscesses they must be employed till the cavity is completely closed; and in wounds not only are they invaluable during the first twenty-four hours, when the irritation caused by the action of the antiseptic on the tissues during an operation renders the flow of bloody serum more free than it would be without antiseptic management; but when the wound is of any considerable depth they should be used so long as even trifling serous oozing continues. (Prof. Lister, p. 110.)

Fractures.—*Permanent extension*, as applied to fractures, and *extension* also after replacement, should be discarded from the vocabulary of the surgeon, and *retention* substituted for it; and this is of easy accomplishment by properly constructed forms of apparatus. For fractures of the thigh a Liston's long splint, or a piece of deal of length sufficient to reach from about three inches above the spine of the ilium to a little beyond the sole of the foot, and of about three inches wide, will do. Make longitudinal slits into the holes in the upper end of Liston's splint and do the same in the other. Make a pad of the same width, and a little exceeding in length the splint; three or four folds of linen will do. Sew these together, and at the same time, on one side, the whole of its length, pieces of ordinary bandage sufficiently long to reach round the body and limb, and on the other a piece of linen about three times the width of the splint. This is for the purpose of securing the stuffing afterwards described. Let the patient lie on his back, as if erect, the body not inclining to one side more than the other. Place the pad against the limb, and fasten it by means of the bandage, so that it lies closely throughout its whole length. Against the pad lay the splint, and where it touches the limb secure it by means of extra pieces of bandage. Now adjust the perineal band. This must be done with care, as the length when once fixed must not be altered. Fill in now completely, evenly, yet firmly, the interspaces between the body, limb, and splint, with any material at hand which will not readily shift its position, such as rag, paper, tow, hay, straw, &c. Having done this, secure the ends and sides to the splint by means of drawing-pins or tacks. Remove the splint from the side, and secure the pad immovably to it by tying it through and through. Adjust the fracture, and apply the splint in the ordinary way by bandage, which for security should be tacked to the sides of the splint. By this means the natural form and length of the limb will be preserved; muscular contraction restored in all its energy, not destroyed; and nature thus assisted, not impeded, by art, is enabled to perform her work in the most speedy and perfect manner possible. More than this art cannot achieve.

In fractures of the leg, whether simple, compound, or comminuted, a rough-and ready yet effective apparatus can be contrived as follows:—Take iece of board half an inch thick and somewhat wider than the limb; scribe the outline of the sound limb upon it, and, by any ready means at hand, pierce holes at equal distances apart along each side parallel to the line, allowing a little space for a pad (if nothing better is at hand, a bit of red-hot iron will do to make the holes); reverse the board and drive pegs of sufficient height into them, and on the underside fasten at each end a semicircular piece of wood, thus making it a rocking cradle, in order that the limb may be enabled on lateral movement, to carry the cradle or splint with it. Here again the natural form is restored. In cases of compound fracture, the pegs on either side can be removed and any portion of the limb exposed for dressing. (Mr. W. H. B. Winchester, p. 75.)

Fracture of the Femur.—Counter-extension is best obtained by elevating the bed at the foot a height of four or six inches. This tilting is borne without much inconvenience by the patient, and is sufficient for all purposes. Extension is to be made by means of a weight running over a pulley at the foot of the bed, and attached to the leg by means of adhesive plaster. The great secret of applying the extending plaster effectively, so as to avoid slipping, is to cut the plaster of sufficient length to extend almost to the knee, and broad enough to encircle the leg at is upper part about the calf, then gradually narrowing to a breadth of about two inches opposite the ankle. A strip of plaster four feet eight in length and four inches in breadth at the end is usually enough for an adult, but the limb should be measured if a good fit is wanted. The plaster must be smoothly applied along the outer and inner sides of the leg, slitting it at the top if necessary to make it lie neatly. It will be found that a loop of two or three inches long extends beyond the sole of the foot In this loop must be placed a piece of wood of sufficient length to prevent the malleoli being pressed on. A convenient size for the foot-piece for an adult is about three inches and three-quarters long, by two inches broad; in its centre is a hole to receive the cord to which the weight is applied. A bandage is then applied from the toes to the knee, passing the bandage beneath the plaster till the ankle is reached, from whence it is carried over the plaster. The weight must not be attached for at least six hours afterwards, in order to allow the plaster to settle and penetrate into the skin. Extension strips applied in this way will remain without any material amount of slipping for a period of six weeks. The thigh should be fitted with four carefully-padded splints, one on each aspect of the limb, extending the whole length of the thigh as far down as the condyles, except the posterior splint, which should extend two inches below the knee, to aid in steadying the joint. There ought to be an interval of half an inch between the sides of these splints. The extending weight having been applied, these splints are to be secured to the limb by two straps with buckles fastening for convenience, on the front of the thigh. The extending weight will vary with the requirements of the case; a rough rule is one pound for each year of age up to twenty. It only now remains to apply the long inner and outer splints. There is no band or other pressure on the perineum, but the extension is made by a weight running over a pulley at the foot of the bed; whilst for counter extension, there is the whole weight of the patient's body with its inclination towards the head of the bed, given by the bed being raised four or six inches at its lower end. (Dr. T. Brown, p. 78.)

Fracture of the Patella.—Place a piece of good adhesive plaster on the front of the leg, its upper edge being cut in a crescentic shape to fit round the lower edge of the fractured patella, and to each of the corners of the crescent attach a small loop. Do the same with the lower part of the thigh, making the crescent to fit the upper edge of the patella when the fractured parts are approximated, and attach the loops as before. Carefully bandage both leg and thigh nearly up to the free edge of the plaster. Swing the leg in a "Neville's Splint" (an ordinary cradle splint will do). The bandage should induce the splint. A piece of cord is to be attached at each side to the loops connected with the plaster below the patella, then passed through the loops of the cornua of the upper plaster, and thence carried over two pulleys clear of the bottom of the bed. The two cords are to be united below this and a weight attached (*vide* woodcut, p. 99.) It will be seen that the weight makes traction upon both plasters, drawing them together and approximating the fractured pieces of bone. (Mr. G. W. Callender, p. 98.)

Expectant Method.—Samborn's method of treatment is as follows:—A pad being placed above and below the broken fragments, a long strip of plaster is applied on the anterior surface of the thigh and leg, extending from the hip to the ankle; a loop is left over the knee-joint, and into this a stick is inserted; by twisting the loop by means of the stick, the pads are brought together and drag the fragments of the patella with them. By this means they can be closely approximated, and this without any objectionable tilting. The results obtained by this plan of treatment are excellent. The plan of treatment adopted by Mr. Pridgin Teale does away with the necessity for any special apparatus, and combines the two great desiderata, simplicity and efficiency, and I think may with propriety be designated the "Expectant Treatment." In a case which occurred in 1865, the leg was placed on a pillow and slightly bent between sandbags, and evaporating lotion was applied. By January 12th the distance between the fragments had diminished to one quarter of an inch; by February 4th they were almost touching; on February 11th the patient was allowed to get up with a starch bandage on; and on February 20th he was made an out-patient, the fracture being united without any perceptible interval, apparently by a band of strong fibrous tissue. Three reasons can be assigned for the gradual approximation of the broken fragments:—(1) At the time of the injury the quadriceps extensor is thrown into a state of tonic contraction; after a few days this contraction relaxes, and the muscle gradually regains its normal length, thus removing all traction from the broken bone. (2) The effusion which always occurs at the time of the accident is slowly absorbed, and by its removal allows the fragments to fall together; and (3) the fibrous band which is formed between the opposing surfaces has, like all other cicatricial tissue, a tendency to contract, and thus to complete the approximation. (Mr. A. F. M'Gill, p. 96.)

Use of Malgaigne's Hooks without penetrating the Skin.—Malgaigne's hooks have never been much used for fracture of the patella, although perfect as a mechanical contrivance for mantaining the fragments in accurate apposition. By protecting the skin well with several layers of moleskin plaster—the fragments of patella being held in close apposition at the same time—the hooks may be applied with perfect success, yet without their points penetrating the skin. (Prof. Spence, p. 95.)

UNUNITED FRACTURE.—Mr. Annandale, of Edinburgh, relates a case of ununited fracture of bones of the forearm. A small portion of bone was sawn off the ends of the ulna and a larger portion off the ends of the radius at the points of fracture. This was necessary, because a portion of ulna at the point of fracture was last atrophied. The ends of both bones were then drilled and secured with strong silver wire. The edges of the wounds being brought together with a few carbolised silk sutures; antiseptic muslin was applied in the usual way and the arm adjusted on a splint. A very successful result followed. It is suggested that the same plan of treatment might prove valuable in cases of recent compound fracture of the bones of the forearm; in order to prevent their inward displacement, with union of radius and ulna to one another. The instrument used for drilling the bone is a joiner's common small pricker. (Mr. T. Annandale, p. 77.)

HEMORRHAGE FROM DEEP-PUNCTURED WOUNDS.—No surgeon will hesitate about the propriety of tying both ends of a divided artery when it can be readily got at, and when the anatomical relations to it can be defined; but when a knife has been thrust deep into a limb in the proximity of large vessels, and when blood wells up rapidly, showing that some considerable-sized artery has been cut, I would warn the surgeon to pause before he dilates the wound. The line of treatment most likely to ensure success is to bandage the limb carefully from below upwards, not too tightly. Suitable compresses should then be applied to control any bleeding from the lower end of the vessel. Supposing it to be a lower limb, direct pressure must be now brought to bear on the femoral artery, just as it passes off the pubis, so that the current is nearly altogether obstructed. The limb must now be supported on pillows and elevated. We thus depend for the supply of blood to the limb from the numerous anastomoses which surround the hip on all sides. The same mode of practice may be strongly recommended in cases of secondary hemorrhage after amputation. (Dr. R. G. Butcher, p. 113.)

RESECTION OF THE OS CALCIS.—The incision which I make is commenced at the back of the foot, just on the internal side of the tendo Achillis, on a line with the middle of that part of the os calcis between which and the tendon the bursa is placed, so that the first portion of the incision being carried boldly down to the bone, this bursa is opened and the tendon set free. The incision is then carried round to the external side of the heel, and so directed that it shall pass along a line extending one-third down from the tip of the external malleolus to the under-surface of the foot, with a slight inferior convexity, then carried on to the spot where we know the os calcis and the cuboid are in contact. The incision being carried down as here indicated, very little more division of structure by a sharp instrument is needful. I detach the soft structures first from the under part and back of the os calcis and, if possible, I even carry the separation as far as its internal surface, so that after a little perseverance and time I am enabled to get the tuberosity of the os calcis to project through the wound by slipping the lower flap well under the bone. The next step in the operation consists in the detachment of the os calcis from the under part of the astragalus, and here it is necessary to proceed upon the upper part of the wound, where, it will be noticed from its position, we have only to work over one-third of the distance, and in doing this I take great care to detach the tendons of the peroneal muscles from the side of the bone without injury, which can be done if a sharp scalpel be not used. The os calcis can be entirely extracted; and provided that in all the incisions which are made during the operation, the instrument (whatever it may be which we employ) is kept close to the bone, no structures of any great importance can be divided. As soon as the os calcis has been thus got out it becomes our duty to ascertain, either by the finger or by ocular examination, what may be the condition of the under surface of the astragalus and of the posterior surface of the cuboid. Here, if the cartilages are roughened or destroyed, or if the bone should appear to be softened (as occurred in one of the three cases I have mentioned) it will be right to gouge away, or by some other method remove, all the softened bone we can get hold of. (Mr. E. Lund, p. 81.)

SUTURES.—*Horsehair.*—A well-selected white hair out of a horse's tail is in many respects better than any suture hitherto devised. That from the tail of a white or grey horse is the best. He cannot tell why it should be so, but he finds the white better than the black hair. The matter, he says, may appear a trifle, but it is nevertheless an important trifle, for if the alleged inconvenience and even danger from suppuration from the hemp and silk ligature, or the disadvantages of the wire, can be avoided, the subject is sufficiently interesting to be worthy of consideration. (Dr. Fayrer, Practitioner, Jan., p. 59.)

TALIPES EQUINUS.—*New form of "Boot" for.*—Mr. Annandale describes a new form of boot for the treatment of this disease. It may be used either with or without division of the tendo Achillis. It consists of a foot-piece and leg support connected together by a moveable joint on each side, so as to allow of flexion and extension at the ankle-joint. At the back and immediately behind the tendo Achillis is a screw which is turned by means of a key. When the screw is turned in one direction it elevates the heel and the appliance can in this way be adapted accurately to the deformed foot. By turning the screw in the opposite direction the heel is depressed, and the relief of the distortion gradually and efficiently accomplished by acting upon the contracted tendo Achillis and other textures. (Mr. T. Annandale, p. 103.)

AFFECTIONS OF THE SKIN, ETC.

ALOPŒCIA.—*Local Stimulants.*—A man, 54 years of age, had in the course of a few weeks become perfectly bald, the scalp being white and shiny.

Nearly the whole of the body was more or less similarly affected. The probable cause had been a sudden and severe nervous shock. He had been under treatment for some months without benefit. Locally to the scalp I painted on some blistering fluid, repeating the application once a fortnight, and ordered the following lotion: carbonate of ammonia one drachm, tincture of capsicum one drachm, rectified spirit one ounce, glycerine one ounce, and rose-water eight ounces, to be applied freely over the body night and morning. For two months I could distinguish no appreciable improvement in his condition; but after that period, new hair, very silky and quite white, began slowly to grow, and became thicker and stronger until the body and head assumed all the appearance of health, being well covered with hair over the different regions, although the colour of that hair, originally dark brown, was now permanently quite white. (Mr. E. C. R. Roose, p. 175.)

HERPES.—*Zinc Phosphide.*—The power possessed by phosphorus over certain forms of neuralgia is well known. In those cases in which the nerve pain has a special relation to debility, this drug effects a cure with a certainty and rapidity which approximate its action to that of a specific remedy. This is most true when the debility is attended by marked anæmia, whether that be the result of hemorrhage, or the less direct result of other causes. It is over the nerve trunks, and more particularly when they are superficial, that phosphorus exerts special powers. This is exemplified in cases of acute neuralgia, occurring in persons who are otherwise in good health. A person employed in exposed situations sustains a continued application of cold and damp air to the side of the face, and is shortly attacked by neuralgic pain in the trifacial nerve. Such a case as this will yield with rapidity and certainty to a few stimulant doses of phosphorus. The cause of the attack is local —the attack confines itself to a definite situation and the remedy removes the condition in too short a time to allow of any modification of the general state of the patient. Phosphorus has been found by Drs. Broadbent and Eames to be possessed of powers over chronic skin diseases, which are superior to those of arsenic in the rapidity with which they are evinced. Psoriasis, eczema, acne indurata, lepra, lupus, and scrofulo-derma have all of them, and that in more than one or two instances only, yielded to this drug with marvellous rapidity, notwithstanding that in some cases the affection was of old standing. No more elegant or effective means of exhibiting phosphorus exists than a concentrated form of the solution enclosed in little gelatine envelopes forming what are known as "*perles.*" These it need scarcely be said, are quite tasteless; and if taken immediately after meals, cause little or no phosphoric eructation. (These capsules are prepared by Messrs. Young and Postans, London, containing various doses of the element.) In the eruptive fevers, it is the stimulant effect of the drug which it is desired to produce, and it must be attempted in the same manner—by exhibiting full doses from the beginning of treatment. As a rule, for this purpose I should be inclined to prefer phosphorus in an alcoholic or etherial solution, given in a dose equal to one-twelfth of a grain, and repeated every four hours. But where the object in view is to give tone to the cutaneous vessels, or to improve the general nutrition of the body, a much smaller dose of the element should be employed, and its administration must be continued for long periods. In these cases, if the patient can be persuaded to swallow a large dose of cod liver oil, he may be allowed to take the thirtieth part of a grain of phosphorus, dissolved in from two to four drachms of it, thrice daily. If, however, this amount of the solvent be objected to, or be deemed unnecessary, the "perles" may be employed. These can be obtained containing the dose named in about four an a half minims of oil; but if these preparations be employed, I prefer to administer the same dose in a larger number of capsules (containing a more dilute solution), since, by this means, much unpleasant eructation may be avoided, to which the more concentrated solution does give rise, notwithstanding every precaution. (Dr. J. A. Thompson, p. 169.)

PSORIASIS PALMARIS.—In a case of this disease which was successfully treated, six minims of Fowler's solution of arsenic and half drachm of liquor potassæ were given three times a day, and an ointment composed of seven parts zinc and one mercurial ointment was rubbed into the parts. In three weeks the physiological effects of arsenic were beginning to show themselves, the infiltration of the skin much reduced. The medicine was diminished to one half, and a weak preparation of oil of cade rubbed into the part affected. In five weeks a slight pinkiness of the palm and an imperfect line of desquamation along the ulnar margin of the hand were the only evidences of the disease left. He considered himself cured. This case yielded much more readily than usual to treatment, owing probably to the fact that the patient was in sufficiently easy circumstances to keep his hand at rest till the cure had commenced. It is far otherwise with workmen who cannot forego the use of their hand. Like eczema in other parts of the body it is much influenced by external irritation. (Mr. E. A. Browne, p. 173.)

SCABIES.—The best plan of proceeding is, in my opinion, as follows. Having once ascertained that scabies exists, order one thorough application at night of mild sulphur ointment to the whole of the body, except the head, and direct the patient to sleep in the drawers, jersey, and socks that he has used the day before; this will secure the death of any stray acari about the body or in his underclothes; in the morning, he should use a warm-bath. The after-treatment should consist of the local inunction of the ointment, into those parts only which are especially affected, for two or three nights. In all mild cases, the cure by this plan is quite certain, and is attended with very little inconvenience. The objections to sulphur-ointment are its irritating qualities and its smell. The first is avoided by using an ointment made with half a drachm to two scruples of the precipitated sulphur to one ounce of lard. The precipitated is in finer powder, and less gritty than the sublimed sulphur, and more efficacious. A great part of the inconvenience arising from the smell of the sulphur may be avoided by using it only during the night. A drop or two of sandal-wood oil will quite disguise the smell. In cases of long standing, it is necessary to have the clothes baked; but a temperature of 190 deg. to 200 deg. Fahr. is quite sufficient, and the bed may be easily fumigated by using a little sulphur sprinkled on the cinders (not too hot) of a warming-pan. It often happens that the irritation of skin remains after the scabies is cured, and thus induces people to go on with the sulphur treatment too long. Instead of doing so, a mild stavesacre ointment should be used, made with the oil of stavesacre and lard; this relieves the itching, and at the same time will kill any stray acari that may have escaped death from the sulphur. (Dr. R. Liveing, p. 174.)

SMALL-POX.—*Prevention of Pitting.*—The application of honey two or three times a day by the aid of a camel's hair pencil is very useful to prevent the pitting of small-pox, presenting most of the qualities desired, viz., exclusion of the air, preservation of the parts permanently moist, and relief of the local irritation. (Dr. J. Ward, British Medical Journal, Dec. 19, p. 773.)

VENEREAL AFFECTIONS.

GLEET.—If the gleet be due to inflamed patches, they may generally be discovered without introducing the endoscope, which is always more or less painful to the patient and troublesome to the surgeon. Put the patient on his back, and introduce a bullet or olivary bougie or sound with slender graduated stem, of a size that will just pass the meatus without pain, and push it slowly along the urethra. As it reaches an inflamed spot there will be a slight resistance, and the patient will feel a smarting pain while the bullet passes over the patch, but when this is left behind the resistance and pain both cease. By reading the number of inches which have been introduced the situation of the inflamed spot can be at once ascertained. This tender spot can be treated best by injecting into the urethra at the spot two or three minims of a solution of nitrate of silver (10 to 20 grains to the ounce). Usually, and when the injection answers best, the discharge increases for two or three days, and then diminishes—if it does not stop altogether—to less than it had been before the treatment was begun. A weak astringent injection should then be used in the ordinary manner for three or four days, when the caustic solution may be applied again as before. At the end of ten days the discharge is often reduced to a few shreds in the urine, and may be finally disposed of by several methods. (Mr. Berkeley Hill, p. 178.)

SYPHILIS.—When the period of primary syphilis has long passed away, and when mercury has been given for a few weeks, it is much more difficult to decide upon the course to be pursued. We have, then, two remedies between which to choose, mercury and iodide of potassium. Of these, iodide of potassium is the more rapid in its influence upon the symptoms actually present, but it probably possesses little or no power to modify the systemic malady. Nothing in clinical history is more remarkable than the rapid amelioration of the symptoms of late forms of syphilis under the use of the iodide; nothing is more certain, generally speaking, than their recurrence in the same or in some modified form. Mercury, on the other hand, will be slower in producing its first action, but more effectual as against the syphilitic taint; although it is not proven that syphilis of long standing can be cured by mercury, at least with anything like the same certainty as the earlier stages of the disease. It is in the eye, however, that the immediately curative effects of mercury are most remarkable; and it is from its visible action upon iritic effusions that many inferences have been drawn with regard to its supposed kindred action in parts of the body that are concealed from view—as, for instance, in the pleura. It may, perhaps, be said that the best rule of practice is to inquire whether the local changes in actual progress are such as to inflict irreparable injury unless they are speedily arrested. If they are, iodide of potassium should be given in the first instance, and should be continued until a distinct impression is made upon the case; when it may be laid aside, and mercury given instead of it, with the hope of anticipating subsequent phases of mischief. If the changes in progress are not of this pressing character, it may often be best to give mercury from the first. In order to obtain a mercurial influence quickly, I use either blue pill, or inunction with blue ointment, or both together; and, for prolonged administration, the perchloride. Inunction is often useful for adults, but its especial value is in the case of young infants suffering from a combination of purulent ophthalmia and inherited syphilis. For them, the plan I prefer is to smear every day a little fresh ointment on a strip of flannel, about an inch and a half wide, which is buttoned round the abdomen, next the skin, and worn constantly. Mr. Hutchinson is accustomed to have the ointment rubbed into the soles of the feet, the only part of an infant's skin on which it never produces irritation. There should be no such thing as a sore mouth resulting from treatment. The slightest line upon the gums indicates a point beyond which the medicine should not be pushed; and the highest art of administering mercury is to keep the patient, as it were, on the brink of this line, without permitting transgression of it. (Mr. J. Brudenell Carter, p. 176.)

AFFECTIONS OF THE EYE AND EAR.

A PEA IN THE EAR.—How is a pea to be removed from the external auditory meatus when it is sufficiently large to preclude the passage of an instrument behind it? The following observation on this point is extremely interesting. The case occurred twelve years ago, and the unfortunate patient was a student at Glasgow, where at the time I was demonstrator. I had no instrument beside me but a straight needle for microscopic purposes. I touched the upper margin of the pea with this, endeavouring to introduce the needle behind the pea, when the pea rolled somewhat and receded. It then occurred to me to place the point of the needle beneath the pea, and, to my great surprise, I had scarcely begun to insinuate the point of the needle when the pea flew out with great violence. Anyone may repeat the experiment, as I have done, with a pea, a tube, and a needle, and may easily arrive at the explanation of what happened in the case which I have mentioned. If the needle be placed above the pea, it presses on the uppermost part of the sphere. By a movement of combined pressure and withdrawal the pea may then be made to roll outwards for a little distance; but in this movement needle and pea move together, so that the point of the needle, continuing to press on the portion originally uppermost but now rolled outwards, ceases immediately to act in a purely downward direction, and jerks the pea back towards the membrana as soon as the increasing pressure inwards exceeds the resistance of friction against the floor of the tube. But if the point of the needle be placed below the pea, it raises it up; and if it has been insinuated in the smallest degree beyond the lowest part of the sphere, and be on a higher level than the handle, the pea tends to roll out over it. It is not, however, essential that the point of the needle be on a higher level than the handle, provided only that the needle be properly insinuated in; for as soon as the handle is depressed so far that the point is at all inclined towards the roof of the tube, the pea is placed between two inclined planes, from between which it is expelled with force. (Dr. J. Cleland, p. 168.)

Balsam Copaiba in Diseases of the Eye.—A soldier in India who had had repeated attacks of syphilis, had inflammation of the right eye, and the whole of the anterior chamber was filled with pus, and sight seemed irretrievably lost. Two drachms of balsam copaibæ were ordered three times a day, in mucilage. Two days after the pain he had been suffering from subsided; and the pus could be seen to be gradually disappearing. In twenty days the eye was quite well. I have been in the habit of giving it in all cases of iritis and sclerotitis for some years in India, and found it far preferable to turpentine, as it does not produce strangury, which the latter drug is very apt to do in that hot climate. (Mr. A. R. Hall, Practitioner, April, 1875, p. 241.)

Conical Cornea—*Operation.* In a case of extremely conical cornea the following operation was performed on the left eye under chloroform. Two very fine curved needles threaded with very fine silk were inserted through the most prominent part of the cone, but not drawn through. In front of these needles, a small elliptical piece of cornea was removed by a long fine Von Graef's knife and forceps. The needles were then drawn through, and the edges of the wound of the cornea thus made were brought together as accurately as possible. The lids were securely closed, and gentle pressure kept up outside; the patient was kept in bed. The fourth day after the operation the stitches were removed under chloroform. The corneal wound was perfectly healed, and the anterior chamber entirely refilled. The risks of this operation are much lessened by the use of stitches. The opacity of the line of cicatrix disappears almost entirely. (Dr. J. A. Nunneley, p. 163.)

Granular Disease of the Conjunctiva.—For general purposes there is nothing equal to a solution of nitrate of silver of 10 grains to the ounce of water, in which strength it is chiefly or wholly astringent. This solution applied daily with a moderately large camel's hair brush (the common penny brushes) cuts short most inflammatory attacks with great certainty and very much reduces the roughness and redness of the lids in the chronic granular condition, unless this be of very old standing. In a great many cases nothing else is required. After using it for several weeks on a number of children it will be found, however, that some of them do not improve either as to discharge or the state of the lids. With these either a solution of 20 grains to the ounce may be used, or the mitigated solid nitrate. If the want of effect has reference chiefly to discharge I prefer the 20-grain solution. When, however, the case is one of old thick granular lids the mitigated caustic often has more and better effect, especially as its action can be regulated with considerable nicety. The solutions of the above strength should not be washed off from the conjunctiva unless in a very few irritable cases, and such will generally not be fit cases for treatment by silver at all. The solid diluted nitrate of silver should at first be washed off after 5—10 seconds with a solution of salt (5 grains to the ounce), or of chloride of zinc (2 grains to the ounce), either with a syringe or a large soft brush; but it will be found after a few weeks that in many cases the application thus made has little effect, and it will be necessary either to wait from 15 to 30 seconds or more after applying the caustic before washing it away, or to omit washing it off altogether. The last procedure is perfectly safe in a great many cases from the beginning; but as, if used in this way to all the cases, there is risk of producing increased irritation and corneal ulceration in a certain proportion, the more cautious plan is safer. The difference between the effect of washing off the caustic and not doing so may often be advantageously studied by using one method to the right eye and the other to the left of the same patient, supposing that the disease was at first symmetrical in degree. The difference in the amount of improvement is sometimes very markedly in favour of not washing off the caustic, while in others (the more irritable ones) these conditions are reversed. The mitigated caustic should at first never be used oftener than three times a week, though some old cases will be found in which its daily application is necessary. The 10-grain solution must be used daily or three times a week, according to the effect it is found to produce. In applying these solutions I think it is much the best to invert both upper and lower lids and allow a large drop to flow over them, accompanying this with one or two gentle movements of the brush so as to distribute it equally; it is of importance to carry the brush high up above the upper edge of the tarsus in the upper lid, or this part, which is generally the seat of considerable structural change, will often escape contact with the solution. The same must be done in most cases with the solid caustic, though in this case more care is requisite in order not to touch the cornea; this accident (which has happened to me two, or perhaps three times) can be avoided partly by keeping the point of the caustic forwards instead of backwards and thus slightly lifting the upper lid away from the globe, and partly by pressing the inverted lower lid backwards and upwards, so as to intervene for a short distance between the globe and the upper lid. Solutions of more than twenty grains to the ounce are unsafe unless washed off. (Mr. E. Nettleship, p. 164.)

IRIDECTOMY.—In the performance of an iridectomy for artificial pupil there is a golden rule for the surgeon to bear in mind—The new pupil is to be as small as he can make it: if it be too large, there is disfigurement, and the vision is rendered indistinct by circles of dispersion and by other obvious optical defects; and if it should be large enough to extend to the ciliary attachment of the iris, the power of accommodation may be diminished. It is not so easy as it would appear to be, to enlarge the natural pupil by merely excising one of its borders; for when the iris has been gripped with the forceps it is very difficult to remove only just enough, and to do this it is necessary that the wound of the cornea should be almost over the situation of the new pupil. And if the healing of the wound should be followed by any haziness, as will be the case sometimes, then most of the benefit from the operation will be thrown away. In order to avoid this difficulty, the wound is made at the scleral junction, the iris is too freely excised, and the operation is done as if it were required for antiphlogistic purposes, and not for optical considerations. If there is one thing more certainly proved than another in the records of operative surgery, it is the power which an iridectomy, when properly performed, exercises over the progress of an attack of glaucoma. It must be stated, however, that judging from the number of cases of glaucoma absolutum which wander from one hospital to another in the vain hope of receiving benefit, either this fact is not sufficiently well known or the disease is very often not recognised. It cannot be too strongly asserted, that if performed early enough, the operation will restore sight; but if it be too late to hope for this, it should yet be done, for it will as certainly relieve the pain and other symptoms. This is not the place for any discussion on the theories which have been broached to explain its action, but it may be said here, that to be successful, the operation must be complete, and generally speaking extensive. It will not be sufficient to enlarge the pupil, or to remove merely a small portion of the iris; it is absolutely essential to remove a section of the entire membrane, and to take especial care that the ciliary attachment is completely severed. It can never be too early to operate in such cases, but it may be too late; for when blindness is complete, and when secondary cataract has developed, and the whole eye is disorganised, should pain recur, it would be dangerous to trust to iridectomy. It is very likely to be followed by intra-ocular hemorrhage, and by increase of pain; the wound will not close, and the eye has to be removed. An eye which is absolutely blind from glaucoma, if it becomes painful, should be removed; such eyes may cause sympathetic ophthalmia, or may become the seat of malignant growths. (Mr. B. J. Vernon, p. 159.)

Lachrymal Fistula.—In cases of lachrymal fistula the style is often objectionable, and even difficult to fit. Mr. Bowman divides the canaliculus in his particular way, and often succeeds. Dr. Nunneley thinks that the whole treatment may be simplified by using Mr. R. Taylor's style. This style is a straight piece of silver to fit the nasal duct, having at right angles to it, at the upper end, a small arm about three-eighths of an inch in length; it is introduced along the slit-up lower canaliculus, through the lachrymal sac into the duct. The little horizontal arm lies in the channel of the canaliculus, which it keeps open, and prevents the style from slipping out of sight, allowing ready removal when necessary. I have used it constantly, and with great advantage. The canaliculus is slit up in the usual way, and I then either dilate for a short time with the ordinary probe, and then put in the style, or more generally, where the case is a straightforward one, introduce the latter at once. Different sizes are required. The style requires to be taken out and cleaned occasionally, and if there be any irritation set up by it, which is not common, the removal of it for a day or two is generally sufficient to allow it to be worn with ease. (Dr. J. A. Nunneley, p. 166.)

MIDWIFERY, ETC.

Cancer of the Uterus.—*Liq. Ferri Perchloridi.*—About two years ago I had occasion to dilate the uterus in a very obstinate case of menorrhagia, proceeding from large vascular granulations in the cavity of the enlarged organ. The strongest Pharmacopœial solution of the perchloride of iron (being, in fact, iron dissolved in pure acid) was injected into the open uterine cavity, and a piece of sponge soaked in the solution left there for twenty-four hours. This treatment was perfectly successful; and I viewed with surprise the efficient way in which the soft and vascular growths were destroyed, whilst the normal structures of the uterus and vagina were but little inconvenienced, and certainly not in the least eroded. Since that time I have been accustomed to use this solution in many cases of cancer of the uterus. I have always used the strongest Pharmacopœial solution undiluted, as I have only used it to secure a caustic action. At first I applied it on pieces of sponge or lint, but finally found cotton-wool to answer best, as it sucks up any quantity that may be required, parts with it readily and can be moulded into any form so as to fill a cavity, or cover over and adhere to any growth. (Dr. C. J. Gibb, p. 195.)

Forceps.—Dr. Johnston, the master of the Dublin Rotunda Lying-in Hospital, uses the long double-curved forceps in a very large proportion of cases before the os is dilated. He says, in no one instance was the forceps applied and the child not delivered. As a proof of the advantage of the double-curve forceps, he would mention that within the last month a woman from Denbigh, North Wales, came under his care, having in a former confinement been delivered by means of perforation. He used the double-curve forceps, and after a considerable amount of dragging he delivered her. It would be difficult to conceive a child more twisted than hers was—so much so that he feared it would not live. It, however, left the hospital quite well with its mother. That was one of the results of the use of the double-curve forceps. Once a grip was obtained with one of these, it would never yield. In another case, that of a woman with her ninth child, there was a depression on the parietal bone of the child of 3¼ in. by 1¼ in. That child also went out with its mother well on the eighth day. With respect to the amount of force, and the yielding of the os, it is astonishing, once you get the forceps in and begin to make gradual traction, in how short a time the os will become fully expanded. (Dr. Johnston, p. 188.)

INDUCTION OF PREMATURE LABOUR.—In bringing on premature labour by detachment of the membranes from the uterine wall, it is most important not to rupture them. In a case in which I lately induced labour in this way I employed a long flexible gum-elastic bougie, passing it in a spiral manner across the fundus, without puncturing the bag of waters. I left it *in situ*, and labour, as desired, was brought on within nine hours ; both mother and infant did remarkably well, without any evil consequences to either. The operation is by no means a difficult one, is perfectly free from danger to maternal structures, and not unfrequently saves many a patient from the perils of forceps, version, &c., and many more infants from death in utero. (Mr. J. C. Lucas, p. 190.)

MANUAL DILATATION OF THE OS.—Manual dilatation of the os uteri at or after the seventh month of pregnancy I can vouch, from a very considerable experience, to be an operation not difficult to perform if the accoucheur has a small hand. And, as far as I know, it is perfectly safe for the patient. In cases of puerperal eclampsia I have been able to open up the os when there was no dilatation whatever, by introducing one finger and dilating, then two, three, and so on, until the conoid hand passed in utero, in less than half an hour, and we know that nature does the same in less time. When there is hemorrhage the os uteri dilates easily and speedily under moderate pressure. (Dr. J. Wallace, Liverpool and Manchester Medical and Surgical Reports, p. 80.)

PROCIDENTIA UTERI.—*The Tow Pessary.*—In a case of complete prolapsus of the uterus, in which no pessary or support was of any use, the uterus was replaced and the vagina plugged with tow, which happened to be lying at hand, covered at the top by, and partially enclosed in, a piece of linen, greased at the outside. Although half a roll of tow was used no inconvenience resulted to the bladder or bowel. It maintained the uterus in its place, and was renewed as often as appeared necessary for cleanliness. The patient was soon able to renew it herself. Some time after her discharge it was heard that the patient was able to dispense with the use of the tow pessary, and that the uterus never came down. A tow pessary might in many cases be used with success, and it has the merit of being incapable of doing injury to the parts with which it is in contact. It is easy of introduction; indeed, this patient soon learned to introduce it for herself. Being a compressible material, the tow would not keep the vaginal walls constantly on the stretch, like a solid body, but would rather allow them to contract gradually upon it, and thus prevent their losing their resilient power. The linen with which it is covered at the top and sides affords an easy means of withdrawing tow for the purposes of cleanliness, and the pressure which the tow exercises on the soft parts is equable, and so distributed that it causes no pain in any part with which it is in contact. Moreover, it is not liable to be displaced by any pressure or weight exerted upon it by the uterus itself or by muscular efforts in defæcation, for it clings, as it were, to the walls of the vagina ; and this, combined with the resistance of the sphincter, effectually prevents it from being displaced. I am very sanguine in the opinion that a *tow pessary* will be found useful in various cases where pessaries are usually employed; but, at all events, I feel sure it will be found a most serviceable and effective means of removing the difficulties and annoyances of a *complete prolapsus of the uterus.* (Dr. E. Copeman, p. 191.)

PRURITUS VAGINÆ.—The author says a dilute solution of tincture of iron has been found an exceedingly effective remedy from this troublesome disease. It has been equally successful in his hands in cases of pruritus ani. In such cases he endeavours to ascertain if the patients are addicted to opium or chloral, as he has found pruritus caused by this class of medicines when habitually taken. The treatment is then of course obvious. In treating pruritus he does not neglect to give aperients, and he thinks the most suitable is an occasional saline in the morning; a Seidlitz will do very well if taken before breakfast. (Dr. Blair, Lancet, Nov. 14.)

Puerperal Fever.—This term embraces a number of diseases having different causes, symptoms, and anatomical lesions. Puerperal fever is produced by the absorption of a poison, either by infection from an acute specific disease such as typhus or erysipelas, or by generation of a poison, within the generative canal, or inoculation of that canal by the examining finger of the accoucheur. This is not to be wondered at, for we know how difficult—nay, how impossible it is for some time to remove from the hands which have been engaged in making a post-mortem examination the odour of the cadaver, even by the most abundant ablutions and the careful use of disinfectants. We know, also, what a small quantity of septic poison is sufficient to engender a fatal disease even in a healthy person; but in the puerperal woman the poison acts at a great advantage, because her system is in more or less exhausted state after the parturient efforts, and it is engaged in throwing off waste products—the wasting from severe muscular action and from the involution going on in the uterus. Besides, the poison, when communicated by the examining finger, is introduced to a part capable of absorbing rapidly, and one which, at that time, is wounded, bruised, and sore from the mechanical violence to which it has been subjected. Under these circumstances the patient is peculiarly susceptible to the slightest contagion or inoculation. (Editor of Lancet, p. 192.)

There can be little question but that decomposing animal matter, however generated or introduced, is the origin of puerperal fever. Semelweiss says, "to prove that the poison was generated in the process of decomposition, and might be conveyed by the hands of attendants, a case of cancer of the uterus in a pregnant woman was the cause of a dozen fatal cases in the same ward, and the probable means of conveyance of the poison were the sponges and other things employed by the nurses, or in the course of examination by the medical attendants. We had a case, too, of necrosis of a knee-joint, which was also the cause of some fatal cases. These were clearly established facts, and they point to the same conclusion." At the conclusion of his treatise on this subject, Semelweiss brings his arguments together in a condensed form as follows: The excess of mortality in the first lying-in *clinique* in comparison with that in the second was occasioned by putrid matter, which was introduced by the hand of the examiner. I have shown that, in October, 1847, the foul material of a foul cancer of the uterus produced puerperal fever. I have shown that, in November, 1847, a decomposing material from a carious knee-joint produced puerperal fever; how the fever was connected with the visits of the surgeons in one hospital in particular, and how the mortality during six years was reduced to less than one per cent. when all connection with the surgical wards was broken off. It was the finger of the surgeon that carried the poison in the latter case; it was the atmosphere in the case of the knee-joint, and the air and the foul linen together in the *clinique* at Pesth, where the infection spread in spite of the washing with chlorine-water. (M. Semelweiss, p. 194.)

MISCELLANEA.

Anæsthetics.—The dangers of anæsthesia, so far as we understand them, are death beginning at the lungs, and death beginning at the heart. When a rabbit or other small animal is killed by chloroform, its death begins at the lungs. It perishes by asphyxia; and, after apparent death, which would pass into real death save for the aid of art, it may, as Dr. Richardson has shown, be easily resuscitated. We think it probable that death beginning at the lungs might be occasioned by ether, and that, if improperly treated, it might become death real and irretrievable. All such cases, however, would probably be remediable if taken in time; and would require nothing but the methodical conduct of artificial respiration. With chloroform and bichloride of methylene there is also the danger of death beginning at the heart, by a sudden paralysis over which the respiration exerts no influence; and it is probable that such cases are always fatal. From this risk it may, perhaps, be said that ether is wholly free; for there is a remarkable concurrence of testimony with regard to its power to sustain the heart, and also by maintaining dilatation of the capillaries, to prevent the heart from being overloaded by blood driven in from elsewhere. (Editor of Lancet, p. 234.)

Chloroform is as safe as ether if the proportion of thirty-three minims of chloroform to a thousand inches of air is not exceeded. But as they are generally given, ether is much safer than chloroform—being much less liable to arrest the action of the heart. I have tried many ways of giving ether, but have always found more resistance to breathing it than chloroform until I made use of nitrous oxide to render the patient partially unconscious, and to assist the action of the ether. Of nitrous oxide I think it may be said that it is the most pleasant of our anæsthetics, that although it destroys animal life it always stops the breathing some time before it stops the heart, and that if the chest is moved enough to admit a very little air into the lungs, natural breathing returns more quickly than when it ceases from other causes. It is very rapid in its action, especially on children, and for tenotomy, reducing dislocations, moving stiff joints, and extracting teeth, it is unequalled. But it is not fitted for operations that require that the patient should be still for five minutes. Convulsive twitchings and delirium of a boisterous character are apt to occur. The combination of gas with ether modifies beneficially the character of both. The plan I now adopt is this: I give nitrous oxide only at first, and by degrees; without removing the face-piece, I turn a stopcock, which allows a portion of gas, during expiration, to pass through a vessel containing ether, into an india-rubber bag, exactly like the supplemental bag; at the next inspiration this gas returns, bringing with it a portion of ether vapour, and mixes with the pure gas coming from the gas-bag. As the way to the ether is opened, the way to the gas-bag is closed. As soon as the ether begins to be supplied the tap of the gas bottle may be screwed tightly, and the escape-valve closed. In turning on the supply of ether, I watch for signs of its irritating the throat, and if it excites coughing or swallowing, I turn back the ether, to lessen its pungency. The patient is usually ready for the operator in sixty seconds; if any air gets between the face-piece it may require two or three minutes. As soon as the least stertor is heard, or any convulsive twitchings of the limbs is visible, I cautiously admit a little air, and keep supplying as much ether as I can without exciting cough. After about two minutes I remove the face-piece every fifth or sixth inspiration, unless, on account of air getting under the face-piece, the patient remains in a satisfactory state of coma without it. After a certain amount of ether has been taken the inhaler may be held so lightly as to admit a considerable quantity of air under the face-piece, but it is not often well to remove the inhaler altogether till the end of the operation. (Mr. J. T. Clover, p. 232.)

Ether v. Chloroform.—I have almost discarded chloroform and bichloride of methylene, both in hospital and in private practice, and, for adults, use ether as my sole anæsthetic. The secret of administration is to give ether enough, and to exclude external air until insensibility is produced. We sometimes use chloroform for young children, who generally take it kindly, and we sometimes give a few whiffs of chloroform to render irritable air-passages insensitive to ether, but that is all. The contrast between the effects of the two agents is very striking. An old patient, brought deeply under chloroform, generally becomes very pallid and bathed in sweat; but the same patient under ether would have a flushed face, and would be sustained and stimulated instead of being depressed. Chloroform and bichloride of methylene have no advantage over ether, except that they act a little more quickly; and the gain of a few seconds affords no justification for the sacrifice of human life. (Mr. R. B. Carter, p. 235.)

The committee appointed by the Royal Medical and Chirurgical Society to investigate the effects of chloroform found that "the same failure of respiration, whilst the circulation remains good, almost always betokens a recoverable condition;" but that "the failure of the circulation to any considerable extent always involves extreme peril;" and "after the heart has stopped, recovery is but just possible, and is by no means the usual result of attempts to resuscitate." So that the danger from chloroform is precisely of that kind which it is most difficult to guard against, and which is most hopeless when it occurs. On the other hand, the same committee state that ether vapour stimulates the heart's action, and that the pressure in the vessels is maintained until there has been a manifest failure of the breathing. And Dr. Snow proved that it was impossible to paralyse the heart by ether inhalation. It is this stimulating property which gives to ether its greater safety, and enables us to use it not only as an anæsthetic, but as an antagonist to the shock of an operation. Under the influence of ether, as I have often pointed out, the patient may have a better pulse after than before even a severe operation. (Mr. W. W. Haward, p. 236.)

ESSENCE OF MINT.—*Antalgic Properties.*—Essence of mint exerts an influence on the sensory nerves comparable to that of chloroform, ether, and camphor. Dr. Savignac states that it has been found extremely useful in removing the itching and pain of pruritus; in alleviating, when employed in the form of injections of the leaves, the miseries of vulvo-vaginal hyperæsthesia, vaginismus, and neuralgias of the head and face; which are best treated by taking a small ball of wool of the size of a nut, which has been made to imbibe a few drops of the essence, and rubbing the painful part with it gently; it is then covered with a larger piece of wool, and the whole is kept in position for a few minutes with the palm of the hand. The success of these external applications of the essence of mint in neuralgias of the face and head, and even in cases of congestive cephalalgia, has been both prompt and permanent. He admits, however, that the cause of the pain must be local for the cure to be permanent, since if it be dependent upon hysteria, or be connected with intermittent fever or with gastric derangement, the primary cause must be dealt with by appropriate therapeutical means. (Dr. Delioux de Savignac, p. 208.)

IODINE.—*A New Method of Administering.*—Pills of iodised albumen present the advantage that the iodine is combined in a constant and known proportion. The iodine is completely masked, and its presence can only be recognised by destruction of the organic matter. This albumen is prepared by agitating actively an albuminous solution with iodine in very fine powder, or in solution in some appropriate vehicle. The mixture is at first highly coloured, blackish brown, but this colour gradually disappears after several hours of contact, and the preparation strikes a violet colour with starch. The product is then desiccated under gentle heat in an air bath, when it may be made into a pill mass. The dose is so arranged that each pill shall contain five milligrammes of iodine. The experiments at the Hospital Beaujon, by Prof. Dolbeau, have shown that iodine thus prepared has no bad effects whatever. The pills, in the dose of five or six per day, act rapidly in the resolution of an hypertrophy of the thyroid gland. Iodised albumen seems to have the efficacy of cod-liver oil. It has been administered in cases of chronic osteitis, ganglionic engorgement, strumous keratitis, and in two cases of Pott's disease with congestive abscesses. It may be continued for several weeks without gastric derangement or other inconvenience. (M. Collas, p. 207.)

JABORANDI.—Jaborandi is a native of South America. The dose for an adult is sixty to ninety grains infused in boiling water. After the patient has drunk the infusion, with the suspended leaves, he should go to bed and cover himself with warm clothing. In about ten minutes the face, ears, and neck become deeply flushed; then soon drops of perspiration break out over the body, and at the same time the mouth waters; in a short space the perspiration rapidly increases, the sweat running down the body and soaking the clothes, whilst the salivation becomes profuse, running from the mouth sometimes in an almost continuous stream. In three of our cases the saliva amounted to an imperial pint, 22 oz., and 27 oz. respectively. The sweating and salivation continue from two to four or five hours, and simultaneously decline. There is a marked antagonism between jaborandi and belladonna in their respective actions on mucous membranes, whilst the former increases the secretions of most of the mucous membranes, the latter decreases or arrests them. Belladonna produces delirium, whilst jaborandi often induces sleep. Both drugs, however, flush the face and quicken the pulse, and both act less powerfully upon children than upon adults. (Drs. Ringer and Gould, p. 228.)

LEECHES.—*To make One Leech do the Work of Two.*—If more blood be required than one leech would be likely to draw, the best plan is to make a free longitudinal incision, with a sharp lancet, into the creature when it is nearly full, and it will then continue sucking until detached, being no longer inconvenienced by the distension of its alimentary canal and integument. The incision should be made in the side of the leech, near its caudal extremity. (Mr. R. B. Carter, St. George's Hospital Reports, p. 124.)

OPIUM.—*New Test for.*—The colour test here described is at once so characteristic and intense, of such easy applicability, and such extreme delicacy that it needs only to be more generally known in order to be often applied. Molybdic acid dissolved in pure sulphuric acid is the test fluid. A saturated, or at all events a strong solution should be made. The reaction is produced by the morphia in opium, not by the meconic acid: the latter undergoes no change with the reagent; the former in minutest quantities at once furnishes characteristic reaction. The best mode of proceeding is to place a drop of the suspected fluid side by side with a drop of the test fluid by means of a glass rod upon either a porcelain slab or a slip of glass laid upon white paper. At once, if morphia or any of its salts be present, a beautiful deep maroon colour will be presented when the fluids are brought in contact. This colour changes after a while, becoming first deep purple, and then gradually losing its red element, and becoming shortly dark, and later a brighter blue. This blue colouration is maintained for several hours, but gradually fades out. (Dr. R. Southey, p. 213.)

PHOSPHORUS.—Phosphorus is a stimulant, possessed of special powers over the nervous system, which is, perhaps, affected primarily through the capillary circulation in closest connection with it. Free phosphorus is now generally acknowledged to be the remedy *par excellence* for conditions known as of brain exhaustion, for example; and that it is the most useful medicine at command in the debility which attends on spermatorrhœa. But, even more than this, Dr. Hammond, in his work on Diseases of the Nervous System, regards phosphorus, used in the small tonic dose under consideration, as the most valuable drug in the treatment of *softening* of the brain ensuing on its over-exertion. Phosphorus is a tonic: special, as restoring exhausted nerve-function, and as renovating, or even rebuilding, altered nerve-matter; general, as affecting the body at large through the renewed nervous system. The dose given should begin at one-twelfth of a grain dissolved in a scruple or more of ether, to be repeated every four hours, or oftener. Probably no useful end will be served by repeating it oftener than every two hours. But I am very clearly of opinion that this dose in this form may, upon occasion, be advanced to one-tenth or one-eighth of a grain, or even higher still. As it has sometimes been thought necessary to force an alcoholic stimulant down a patient's throat until he *did* show some signs of recovery, so I have not hesitated, under appropriate circumstances, to increase the dose of phosphorus with a similar perseverance and confidence. But if it be desired to elicit the tonic powers of this drug, the medication must be pursued on an entirely different plan. First of all the formula to be employed may be a more pleasant one—a pill. One-hundredth of a grain in a dessert-spoonful of oil taken twice a day, will be found the most useful dose and form for procuring tonic effects with phosphorus in the majority of cases. Cod-liver oil is the only oil which is known not to interfere with the action of phosphorus, or to expose it to change. It has further the great advantage of entirely concealing the odour and taste of the drug. (Mr. J. Ashburton Thompson, British Medical Journal, Nov. 7, p. 584.)

RHAMNUS FRANGULA AS A SUBSTITUTE FOR CASTOR OIL.—A fluid extract of the bark of Rhamnus frangula or black alder tree, one drachm being equal to one drachm of bark, is an aperient which possesses all the advantages of castor oil without its disadvantages. It is a mild laxative, its action being unaccompanied by griping or other disturbing symptoms. This extract is a dark brown thickish fluid, with a rather sweetish and far from disagreeable taste. The dose of course varies according to the effect desired, the age, and the condition of the patient; but I have proved from experience that the quantity suggested by the makers of the extract—viz., one to two drachms—is, as a rule, too small for an adult. For a child one drachm is sufficient, but for an adult a dose of from two and a half—that is, an average dessert-spoonful—to five drachms is necessary, and I generally order the following: ℞. Extracti rhamni frangulæ liquidi, ʒ v., aquæ ad ℥ j., M. sig.; the half to be taken in a wineglassful of cold water, and should the bowels not move in four hours, the remainder to be given; or the first dose at night, and the second in the morning should no motion have taken place. The effects are much akin to those I have mentioned as the advantages of castor oil, but there is no nausea, there are no eructations, and there is no griping. (Dr. J. C. O. Will, p. 230.)

STRYCHNINE.—*Iodic Acid as a Test for.*—It occurred to me that iodic acid would prove a far more delicate colour-test for the presence of strychnine in very minute quantities than any of the ordinary oxidising agents ordinarily recommended or employed in the standard works on forensic medicine—bichromate of potash, peroxide of manganese, ferrocyanide of potassium, black oxide of manganese, &c.; for these are all substances which, either in solution or mixture with fluid, possess colour in themselves, and although it is not one single colour, but a play and successive change of colours, that signifies the presence of this particular alkaloid, still a colourless test solution appeared to me a real desideratum. As a class experiment I found a saturated solution of iodic acid answer admirably, not by producing any play of colours when warmed in contact with strychnine, but by evolving an invariable pink-rose tint, which lasts for some little time—an hour or more—and gradually fades out through flesh to a fawn coloured substance. (Dr. R. Southey, p. 212.)

TANNIN.—*Local Use of.*—To prepare it of full strength, an ounce of perfectly fresh tannin must be mixed with six drachms of water, in which it readily dissolves. This solution is a thick fluid, of the colour and consistence of treacle, which keeps much better than tannin itself. The strong solution of tannin is a powerful astringent, almost free from irritating properties. It is one of the best dressings for wounds—far superior to collodion, and even less irritating than the styptic colloid, which it somewhat resembles. If applied by a brush and allowed to dry, it soon forms a pellicle, which excludes the air, and gives ease to pain. It may be applied to almost any form of ulcer, and to wounds after amputations or other operations, especially when not very deep. It answers well, for instance, after the operation for harelip, painted over the pins and threads, in the same way as collodion is sometimes used. Strong tannin solution applied to the ulcerated skin of ingrowing toe-nail at once removes pain. After one application, the offending corner of the nail may be readily raised, a little lint inserted underneath, and the nail allowed to grow up. Among many cases, I have in this way cured one in which evulsion, twice performed, had proved only a temporary remedy, the disease being reproduced each time the nail grew up. For cracked nipples, Martin's solution, diluted with an equal quantity of water, is the best application, and corresponds to the tannin-solution commonly used for this purpose. Enlarged tonsils may be reduced by daily brushing with Martin's solution. This treatment, though vastly inferior to extirpation, or even to the application of potassa cum calce, is painless, and therefore, in some cases, useful. Bleeding warts may be readily removed by this application, as also by the perchloride of iron. I have found the former to readily reduce the granulations from an unhealed umbilicus in an infant. I have long been prepared to use Mr. Martin's solution in any case of severe uterine hemorrhage I might meet with, as Mr. Thomas suggests, but have not yet had occasion to do so. (Mr. Philip Miall, p. 211.)

SALICYLIC ACID, A NEW DISINFECTANT.—It is used for medical and surgical purposes either dry or in solution. When used dry it is sprinkled on to wounds, ulcers, or dressings in the form of very fine powder, in very small quantities, either simply powdered, or mixed in various proportions with some diluent such as starch. When used in simple solution either for spraying surfaces, or for washes or gargles, it is used in tepid solution of about one part to 300 parts of water. Where stronger solutions are required for washes, gargles, or to moisten dressings, one part of the acid and three parts of phosphate of sodium to fifty parts of water have been used. When applied to wounds it appears immediately in the urine. Its alleged advantages over all other antiseptics are—first, that it is far more powerful and effective in smaller quantities; and secondly, that it is, in all quantities necessary for complete effectiveness, entirely devoid of irritant action upon the living tissues. It is not caustic nor corrosive in any quantity, and never produces inflammation. In large quantities it may be irritant and painful, but yet rarely surpasses a stimulant effect, while it appears to be quite neutral in the very small quantities which are yet thoroughly effective; thirdly, it is said to reach and prevent processes of decomposition which are beyond the reach of all other antiseptics, or antiferments. (Editor of Medical Times and Gazette, p. 202.)

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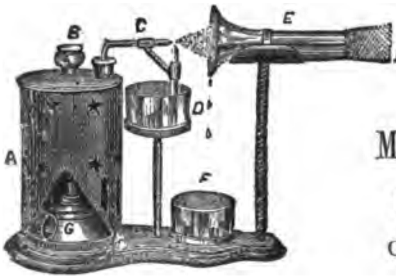

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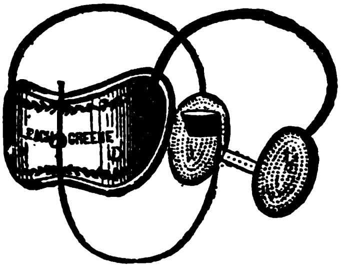

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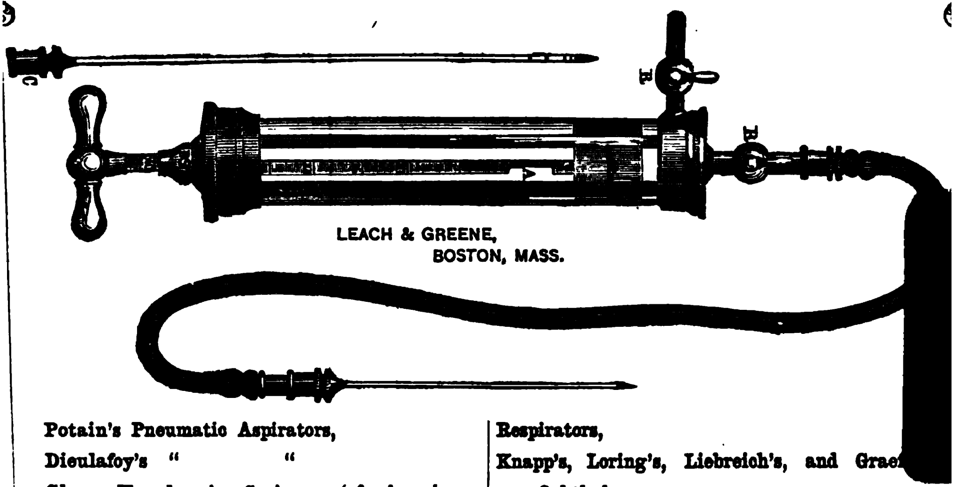

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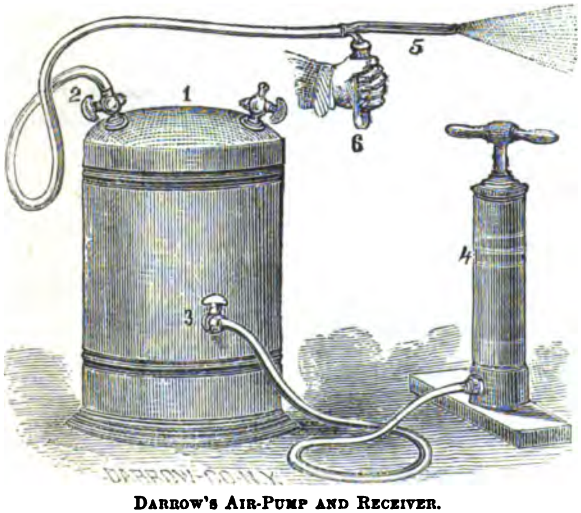

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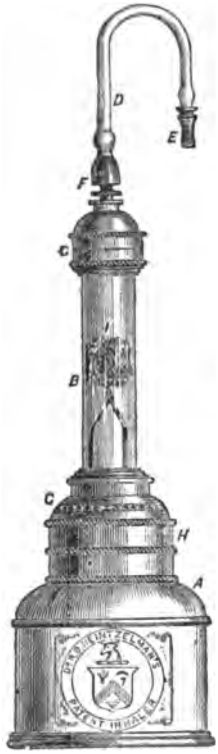

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D. Flexible Tube.
E. Mouth Piece.
F. Attachment of Tube.
G. Perforated Ring Valve.
H. Metallic Coupling.
I. Sponge within the Cylinder.

FIGURE 2.

A. Glass Receiver.
B. Glass Cylinder.
C. Metallic Cap.
D. Flexible Tubes.
E. Nasal Bulbs.
F. Attachment of Tubes.
G. Perforated Ring Valve.
H. Sponge within the Cylinder.
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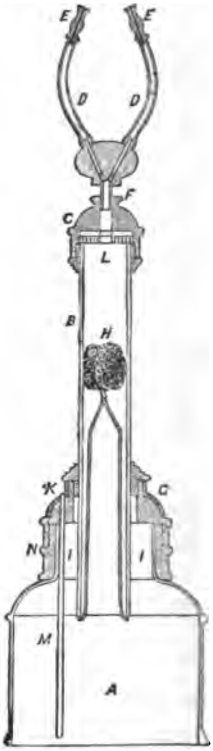
K. Perforation for Air.
L. Perforated Diaphragm.
M. Air Tube.
N. Metallic Coupling.

Figure 2.



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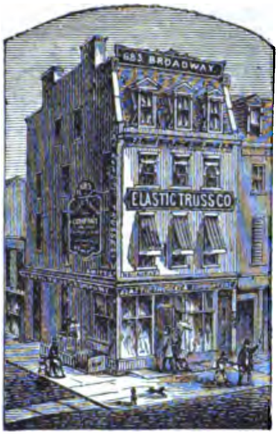
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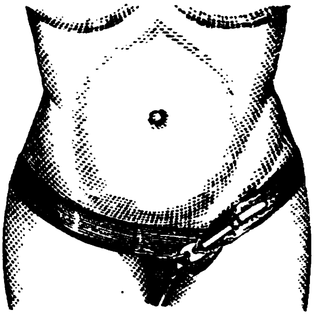

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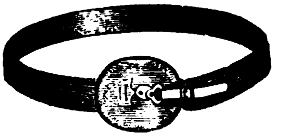

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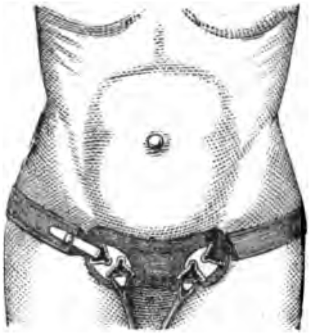

For the cure of Prolapsus Uteri, Prolapsus Ani, Piles, and all descriptions of abdominal weakness, has unquestionably been more successful than any and everything heretofore used; in short, it is the acme of perfection, and is not only superseding every other device for the relief and cure of female Uterine complaints, but is being largely adapted by gymnasiums, pedestrians, base-ball players, and others subject to violent exercise, as it is a perfect safeguard against rupture, and so strengthens and supports the body that it can endure twice the amount of fatigue with, that it can without it. Especially should no female having any tendency to the above complaint be without one, as it will entirely relieve the dragging down, weary feeling, and impart new life to the wearer.

In exceptional cases, it may be advisable to use our Pessary in connection with the supporter (for a short time only), for Prolapsus Uteri, which will be furnished for $3, additional to the price of supporters.

From the numerous testimonials in our possession we append the following:

"After the experience of months, patients testify strongly to its *efficacy*, as well as to the *ease* and freedom from inconvenience with which the instrument is worn. With superior advantages, the *Elastic Truss* possesses in a high degree ALL requisites and qualifications *claimed* for other inventions. I have no hesitation in regarding it as an important means for the relief and cure of Hernia."

J. M. CARNOCHAN, M. D.

"Ex-Health Officer of the Port of New York, Surgeon-in-Chief of New York State Hospital," etc., etc.

NEW YORK, March 10th, 1874.

GEO. V. HOUSE, M. D.

Dear Sir: After suffering for thirty years, in my own person, from the use of every form of Metallic Truss procurable in this country and in Europe, I, two years ago, applied your *Elastic Truss*, and since that time I have experienced comfort and satisfaction, and been taught the truth, that the Elastic Truss is the only instrument that should be used for the relief and cure of Hernia; and now after more than thirty years continuous practice, and having adjusted many hundreds of Trusses (and for the last twenty months yours exclusively), I gratefully declare it to be my deliberate opinion, that *your Elastic Truss* is the only one entitled to the confidence of the public; that elasticity is the only power at all adapted to the requirements of a Truss or Supporter, and am convinced that *your Elastic Truss* actually cures a large proportion of all cases to which it is applied, not only among children, but in numerous cases within my own knowledge of patients from 50 to 75 years of age.

W. H. BURNHAM, M. D.

Prof. of Anatomy and Surgery, N. Y. E. Medical College.

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39 East 19th Street, NEW YORK, July 31st, 1873.

MR. G. V. HOUSE.

Dear Sir: In the numerous cases of different kinds of Hernia which I have sent to you for the application of the Elastic Truss, the result, I am happy to say, has been in every instance perfectly satisfactory. Next to its efficiency, the comfort with which the instrument can be worn, is a quality recommending it above any other with which I am acquainted.

Yours respectfully,

L. T. WARNER, M. D.

SUPERINTENDENT ELASTIC TRUSS CO.:

Sir:

After many years experience in treating almost visceral displacements, it gives me great satisfaction to testify to the superiority of the Elastic Tension-Band over the steel spring or other metallic device employed for the retention of Hernia, and for the obvious reasons—

1. That the inevitable effect of the metallic spring of the ordinary Truss is, by undue disturbance of the electric current to the extent of actual paralysis of the Kidneys, Bladder, Bowels and Generative Organs—a result that can never attend the correct application of the Elastic Truss or Elastic Supporter; in fact, there is no doubt that this paralysis, or semi-paralysis, which is a common consequence of the use of the Metallic Truss, can be effectually remedied by the prompt substitution therefor, of the Elastic Truss or Supporter.

2. That the Elastic Truss can be worn *constantly*, by night as well as by day, which is an essential condition of cure.

I do not know that your Elastic Truss *is* always effectual, but I *can* say, that in the nature of things, it ought to be, and that when properly adjusted and *kept* so, it must prove to be. As a matter of scientific mechanical arrangement, it is certainly the most admirable Truss ever invented, and for the good of humanity it *ought* to supersede all other kinds, as it is capable of excelling them all in respect to comfort and efficiency.

In view of what I know of Hernia and of Trusses, from a professional standpoint, I feel to most cordially extend to you my best wishes for your success in your great enterprise, and that you may enjoy the eminent distinction and the great good fortune of making the Elastic Truss and Supporter in practice, as it surely is in theory, one of the greatest remedial blessings conferred by genius upon the human race.

I am, most sincerely yours,

GEO. W. BROOKS, M. D.

38 West 32d St., N. Y.

SUPERINTENDENT ELASTIC TRUSS CO.

Your Elastic Truss is an admirable appliance for the retention and cure of all forms of Hernia—in my opinion, the best ever devised. It is destined to supplant all forms of Metallic Trusses, as it should do. The fact that it can be worn at all times, day and night, is of the utmost value in practice.

I have made extensive use of your Truss in my practice, and therefore speak, in this matter, what I do know.

W. H. SCOTT, M. D.

No. 8 E. 41st St., New York, July 23d, 1873.

MICHIGAN CITY, Ind., Sept. 18th, 18

G. V. HOUSE, Supt.

Dear Sir: Inclosed please find money order for send with as little delay as possible, as the patient is old and *impatient*. I believe I have never said anything to you about my Truss. I wish to say that it gives me much pleasure to testify to its merits. I had been without a Truss for ten years because I could not wear an ordinary steel spring Truss. My rupture had become quite large, and was causing me a good deal of trouble. The one I obtained from you I have been enabled to wear with perfect ease, and I am quite sure that it has accomplished a radical cure—have left it off for twenty-four hours without any appearance of Hernia or discomfort, but shall continue to wear it for at least six months more.

Very respectfully,
D. T. BROWN, M. D.

WELLSBURG, W. Va., Aug. 20th, 1873.

GEO. V. HOUSE,
General Superintendent Elastic Truss Co.
Dear Sir:

During twelve years of active practice in medicine, obstetrics and surgery, it has been my fortune to attend over two hundred cases of Hernia (Rupture). This experience, of course, caused an acquaintance with very many patent Trusses and Supporters, of which the Elastic Truss alone can be counted a success, as to comfort, efficiency, and radical cure. I ordered my first about three years since, for Mr. Denny, and *radical cure* has been the uniform result, down to the case of Mr. Linton, who reports one side entirely closed up, and in a few weeks will look for the adhesion to be perfect on the other side.

If desired, the names and address of those cured, will be furnished. I inclose P. O. order and description for two more for my patients.

Very respectfully,
S. T. DODD, M. D.

MARQUETTE, L. S. Mich., 12, 20, 1873.

SUPERINTENDENT ELASTIC TRUSS CO.
Dear Sir:

Will you please send me some of your measurement blanks and circulars? About six weeks ago I began to use one of your Elastic Trusses, and am now entirely cured. I had worn steel-spring Trusses previous, without any benefit.

Yours, etc., W. CALL,
Cashier First National Bank of Michigan.

BELLEVILLE, N. J., February 19th, 1874.

I do hereby certify, that I purchased of the Elastic Truss Company, an Elastic Truss, last September; it not only cured my Rupture, but likewise cured me of gravel and kidney complaint from which I suffered for many years. I am now in my seventy-fourth year, can walk better, and am stronger than I was ten years ago.

THOMAS STEPHENS.

MAUCH CHUNK, Pa., May 20th, 1873.

To those afflicted with Hernia, let me say to you that, after suffering for more than six years with Rupture, I obtained one of the Elastic Trusses, manufactured by the Elastic Truss Company, of 683 Broadway, and after wearing it for about ten months without removing it, I find that I am entirely cured. I advise all who are thus sufferers to examine them.

Yours respectfully,
HOWARD M. KILMER,
Clerk of the American Hotel.

FORT MADISON, Iowa, Sept. 4th, 1873.

SUPERINTENDENT ELASTIC TRUSS CO.
Dear Sir:

I sent for and received one of your Elastic Trusses, and it has given me more comfort than I have had for years. I was ruptured in 1847, and never had anything to relieve me till I have been wearing your Truss. I can work right along; I am a carpenter by trade; can climb around with perfect ease, and can carry anything without hurting me. There is no protruding now.

Yours truly,
W. B. TURNER.

[*From the Toledo Blade.*]

SPRING HILL Ill., Nov. 25th, 1873.

TOLEDO BLADE:

I saw in your paper an adver-
russ, directing to send for circu-

New York City. I was at that time laboring under pain and all the inconvenience of rupture. I sent as directed, and obtained a circular, and also, by means of measurement and directions, I obtained the Truss and applied it. I have worn it about nine months, and I am happy to say to you to-day, that, though I am seventy-four years of age, I consider myself cured, and all without pain or inconvenience. I still wear the Truss as a matter of choice—it seems like a part of my clothing. I would say to every one afflicted with Hernia, try it, *it will cure*. I want to say to you that the knowledge obtained through the advertisement has been more to me than the subscription of the *Blade* for twenty years, and believe it to be the duty of every newspaper in the land, from the *Congressional Globe* to the smallest village paper, to publish it for the good and benefit of suffering humanity.

Yours truly,
C. P. LANPHERE.

BROOKSVILLE, Miss., June 13th, 1873.

SUPERINTENDENT ELASTIC TRUSS CO.

Dear Sir: About nine months ago I bought one of your Elastic Trusses. Five months of the time I would take it off on going to bed, not having much assurance in it or anything else producing a cure; but for the last four months since, I have been sleeping with it on. I believe that it will eventually bring about a permanent cure. I expect to use your Truss as long as I live, if not cured. I would not be deprived of one for anything in the world. I hope by constant use of the Truss to be permanently cured.

Yours respectfully,
C. S. GAVIN.

BOONSVILLE, Va., October, 1873.

SUPERINTENDENT ELASTIC TRUSS CO.

Dear Sir: I have received my Truss, and have worn it constantly for two weeks; I have had more ease since than I have had for the last seventeen years. I can do all my work, and can not praise your Elastic Truss enough. I thank God that he ever put it in the hearts of men to invent such a thing to be of such comfort to afflicted persons.

Yours respectfully,
M. B. WALTAN.

Forty-Second Exhibition of the American Institute Fair of the City of New York.

NEW YORK, Nov. 24th, 1873.

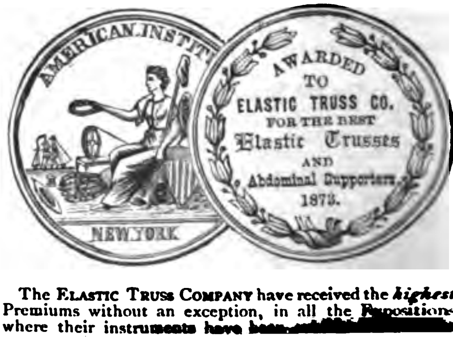
Copy of Judges' Report:

Elastic Trusses and Abdominal Supporters No. 103, *Exhibited by Elastic Truss Company.*

It is with much pleasure we announce to you, that after mature deliberation, we have decided that the Elastic Trusses, inguinal and umbilical, are superior to all others on exhibition, or that heretofore have come to our knowledge, in its perfect adaptability to the person, and also the comfort the wearer receives, and the perfect manner in which they retain the bowel. By these supports, the discomfort of the old steel spring is avoided. These Trusses and Supporters can be worn conveniently by night as well as day, thereby facilitating the cure. We would most respectfully ask for the above your highest premium.

JOHN OSBORN, M. D.
D. F. FETTER, M. D.
C. D. VARLEY, M. D.

Awarded a SILVER MEDAL.


AMERICAN INSTITUTE
NEW YORK
AWARDED TO ELASTIC TRUSS CO. FOR THE BEST Elastic Trusses AND Abdominal Supporters. 1873.

The ELASTIC TRUSS COMPANY have received the ***highest*** Premiums without an exception, in all the Expositions where their instruments have [illegible]